

Revise the title to Preliminary
Drainage Report.

Revised to Preliminary Drainage Report



MASTER DEVELOPMENT DRAINAGE PLAN

FOR

**CLAREMONT COMMERCIAL
SUBDIVISION FILING NO. 2**

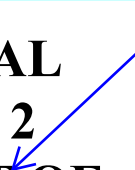
A RESUBDIVISION OF TRACT OF

CLAREMONT BUSINESS PARK FILING NO. 2

EL PASO COUNTY, COLORADO

Tract C

"C" added



NOVEMBER 2019

Prepared for:

Hammers Construction, Inc.
1411 Woosley Heights
Colorado Springs, CO 80906
(719) 570-1599
&
Lena Gail Case
c/o Randy Case II
102 E. Pikes Peak Ave, Suite 200
Colorado Springs, CO 80903

Prepared by:



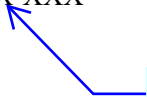
20 Boulder Crescent, Suite 110
Colorado Springs, CO 80903
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Project #44-037
PCD - SP-XX-XXX

1

Added

SP197



Please revise title, typical.

Revised to Preliminary Drainage Report

**MASTER DEVELOPMENT DRAINAGE PLAN FOR
CLAREMONT COMMERCIAL SUBDIVISION FILING NO. 2
A RESUBDIVISION OF TRACT C OF
CLAREMONT BUSINESS PARK FILING NO.2
EL PASO COUNTY COLORADO**

DRAINAGE PLAN STATEMENTS

ENGINEERS STATEMENT

The attached drainage plan and report was prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Virgil A. Sanchez, P.E. #37160
For and on Behalf of M&S Civil Consultants, Inc

DEVELOPER'S STATEMENT

I, the developer(s) have read and will comply with all the requirements specified in this drainage report and plan.

BY: _____

BY: _____

TITLE: _____

TITLE: _____

DATE: _____

DATE: _____

ADDRESS: Lena Gail Case
2432 Parkview Lane
Colorado Springs, CO 80903

Hammers Construction, Inc.
1411 Woosley Heights
Colorado Springs, CO 80906

EL PASO COUNTY'S STATEMENT

Filed in accordance with the requirements of El Paso County Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and the Engineering Manual, as amended.

BY: _____

DATE: _____

Jennifer Irvin, P.E.
County Engineer / ECM Administrator

CONDITIONS:

**MASTER DEVELOPMENT DRAINAGE PLAN FOR
CLAREMONT COMMERCIAL SUBDIVISION FILING NO. 2
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CLAREMONT BUSINESS PARK FILING NO.2
EL PASO COUNTY COLORADO**

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**MASTER DEVELOPMENT DRAINAGE PLAN FOR
CLAREMONT COMMERCIAL SUBDIVISION FILING NO. 2
A RESUBDIVISION OF TRACT C OF
CLAREMONT BUSINESS PARK FILING NO.2
EL PASO COUNTY COLORADO**

Previous report was approved in December of 2018

Revised

PURPOSE

This document is intended to serve as the Master Development Drainage Plan for Claremont Commercial Subdivision Filing No. 2 and will effectively supersede the previously approved Preliminary Drainage Report for Claremont Commercial Subdivision Fil No. 2, A Resubdivision of Tract C of Claremont Buisness (sic) Park Filing No. 2, El Paso County, Colorado previously approved in March of 2018. The purpose of this document is to identify and analyze the onsite drainage patterns and to ensure that post development runoff is routed through the site safely and in a manner that satisfies the requirements set forth by the El Paso County and City of Colorado Springs Drainage Criteria Manual. The proposed principal use for the site will be neighborhood commercial and light industrial. The parcel is zoned by El Paso County for commercial service as CS. This is the preliminary drainage report; a final drainage report shall be required with the final plat. A drainage letter will be required with the development of the individual lots, provided that no significant changes from the approved final drainage report are being proposed.

GENERAL LOCATION AND DESCRIPTION

Claremont Commercial Subdivision Filing No. 2 is located in the Northeast ¼ of the Northeast ¼ of Section 8, and the Southeast ¼ of the Southeast ¼ of Section 5, Township 14 South, Range 65 West of the 6th P.M. in El Paso County, Colorado. The site is bordered to the southeast by U.S. Highway 24 and to the northeast by N. Marksheffel Road, to the north and west by Meadowbrook Parkway, and to the south by a vacant, undeveloped lot. The site lies within the Sand Creek Drainage Basin. Flows from this site are tributary to Sand Creek.

The site consists of 13.7 acres which is currently vacant land with a relatively new roadway infrastructure for Meadowbrook Parkway and associated utilities services directly adjacent to the site. Vegetation is sparse, consisting of native grasses and weeds. Existing site terrain generally slopes from north to southwest at grade rates that vary between 1.2% and 2%. A soil retention wall runs along the eastside of the proposed site, next to U.S. Highway 24 and N. Marksheffel Road, and borders a large portion of the back of the proposed lots. The Claremont Commercial site is currently zoned "CS" and the proposed principal use for the site will be neighborhood commercial and light industrial.

Two sand filter basins will provide water quality treatment for the proposed development. The outlet structures of the proposed water quality ponds will tie into an existing storm sewer system near Meadowbrook Parkway, which routes the treated runoff southwest into Sand Creek. See Appendix for details.

SOILS

Soils for this project are delineated by the map in the appendix as Ellicott Loamy Course Sand (28), Blendon Sandy Loam (10) and Blakeland Loamy Sand (8) and have been characterized as Hydrologic Soil Types "A" & "B". Soils in the study area are shown as mapped by S.C.S. in the "Soils Survey of El Paso County Area". See Appendix for soils report.

HYDROLOGIC CALCULATIONS

Hydrologic calculations were performed using the El Paso County and City of Colorado Springs Storm Drainage Design Criteria manual and where applicable the Urban Storm Drainage Criteria Manual. The Rational Method was used to estimate stormwater runoff anticipated from design storms with 5-year and 100-year recurrence intervals.

HYDRAULIC CALCULATIONS

Hydraulic calculations were estimated using the Manning's Formula and the methods described in the El Paso County and City of Colorado Springs Storm Drainage Design Criteria manual. The relevant data sheets are included in the Appendix of this report.

FLOODPLAIN STATEMENT

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel No. 08041C0756G, revised December 7, 2018. No portion of this site is located within the 100 year floodplain. See Appendix.

The previous page indicates 2 sand filter basins. Please revise.

Revise to indicate (2) Pond facilities

The drainage plan and recently approved drainage report for adjacent property indicate a 42" RCP along Meadowbrook Pwky. Please revise accordingly.

DRAINAGE CRITERIA

This drainage analysis has been prepared in accordance with the current City of Colorado Springs/El Paso County Drainage Criteria Manual. Calculations were performed to determine runoff quantities for the 5-year and 100-year frequency storms for developed conditions using the Rational Method as required for basins having areas less than 100 acres. See Appendix for calculations.

Revised

FOUR STEP PROCESS

Please revise your label of the previously approved drainage report as it is not an MDDP. It is a Final Drainage Report.

Changed Reference to FDR

Step1 Employ Runoff Reduction Practices –Roof drains will be directed to property lines swales to minimize direct connection of impervious surfaces.

Step 2 Stabilize Drainageways – The site is upstream of an existing 40"/48" RCP storm sewer system that directly discharges to Sand Creek Channel via an outlet structure with wingwalls. The "Final Drainage Report for Claremont Business Park Filing No. 2", dated November 2006, by Matrix Design Group, Inc. (henceforth referred to as "MDDP") has been designed to discharge developed flows via a 48" RCP storm sewer system directly into the East Fork Sand Creek. The Claremont Commercial Filing No. 2 site proposes a Sand Filter Water Quality Facility before flows are discharged to the existing private 40"/48" RCP system east of Meadowbrook Parkway. The outlet underdrain has been designed to drain the pond in a peak event within 12 hours, therefore it's not anticipated to have negative effects on the downstream drainageways.

Step 3 Provide Water Quality Capture Volume – Two Sand Filter Basin water quality facilities are proposed to provide WQCV.

Step4 Consider Need for Industrial and Commercial BMP's – This submittal provides a final grading and erosion control plan with BMPs in place. The proposed project will use silt fence, a vehicle

preliminary GEC has been provided. Final GEC plan will be provided with the final plat. Please revise.

Revised as requested

Additional discussion regarding the 30" stubs has been added to the narrative

Please include discussion regarding existing pipes/stub outs on the property indicated in the previously approved drainage reports by Matrix and why they were not used.

tracking control pad, a concrete washout area, mulching and reseeded to mitigate the potential for erosion across the site.

Please revise your label of the previously approved drainage report as it is not an MDDP. It is a Final Drainage Report.

EXISTING DRAINAGE CONDITIONS

The CLAREMONT COMMERCIAL Filing No. 2 site consists of 13.7 acres and is situated east of the East Fork Reach of the Sand Creek Watershed. This area was previously studied in the "Final Drainage Report for Claremont Business Park Filing No. 2", dated November 2006, by Matrix Design Group, Inc. (henceforth referred to as "MDDP"). The MDDP calculations indicate that, under the fully developed conditions, the total tributary area of Sub-basins B1, B2, and B3 (18.1 acres), with basin B3 including the eastern half of Meadowbrook Parkway, would produce a cumulative runoff of approximately Q5=42.6 cfs and Q100=86.6 cfs (Design Point 2). The MDDP illustrated that the watershed would drain from east to the southwest towards Meadowbrook Parkway. As stated in the MDDP, overlot grading activities for the entire site have been completed. Per Resolution 16-426 of the BoCC, on-site WQCV is required but on-site stormwater detention is not required per the FDR for Claremont Business Park Fil. 2.

Revised to Matrix FDR

A 48" public storm sewer runs along Woolsey Heights and is routed directly to the Sand Creek channel. Two 10" Type R at grade inlets exist at the intersection of Woolsey Heights and Meadowbrook Parkway, one on the northwest and the other on the northeast corner of the intersection. Runoff from the site and the two surrounding streets, Meadowbrook Parkway and Woolsey Heights, is intercepted by these inlets and conveyed to the Sand Creek channel via the existing 48" public storm sewer.

Refer to the drainage basin descriptions that follow for additional information as well as the Drainage Map located within the Appendix of this report.

Please indicate who owns the private storm sewer.

revise sentence accordingly.

PROPOSED DRAINAGE CHARACTERISTICS

General Concept Drainage Discussion

A statement has been added to the ownership and maintenance

Revised

The majority of the site will consist of neighborhood commercial and light industrial, asphalt, curb, two storm water quality sand filter basins, and landscaping. The site will typically drain using across asphalt and impermeable surfaces which direct runoff primarily to the south and southwest to proposed private pipe systems which direct runoff to one of two private ponds. The outlet structures of the proposed water quality ponds will release runoff to the existing private 42" RCP storm sewer located at the southwest corner of the site. A survey and inspection of the existing 42" RCP shall be made before use. The existing private 42" storm sewer ties into an existing public 48" storm sewer which will route the treated runoff to Sand Creek. For more information of drainage basins, existing and proposed structures refer to the Proposed Drainage Map located within the Appendix of this report.

Detailed Drainage Discussion

Basin A, 0.19 acres, consists of steep slopes of 32% adjacent to portions of U.S Highway 24 and N. Marksheffel Rd. The roadway embankment within **Basin A** slopes into a soil retention wall that runs along the south east boundary of the site. Runoff for **Basin A** is limited has been calculated to reach peak flow rates of Q5=0.1 cfs and Q100=0.6 cfs. Flows produced within the basin will be conveyed westward into adjacent basins (**Basin B**) as sheet flow.

Basin B, 1.39 acres, consists of Lot 11 along the northeast corner of the proposed site. Runoff produced within **Basin B** is anticipated to reach peak runoff rates of Q5=5.5 cfs and Q100=10.1 cfs. A proposed private 24" polyethylene storm drain (**Pipe 1**) will be extended to **Design Point 1**(Q5=5.5 cfs and Q100=10.1 cfs) to capture runoff from **Basins A** and **B**.

Please also include in your narrative how your proposed flows entering the existing storm system compare to the previously approved drainage report from Matrix. State whether or not the existing facilities are adequate. Please take into account the recently approved drainage report from the lot to the south (PCD file no. PPR192) that will also tie into this existing system. a statement has been added with Basin N regarding the combined flows with development to

The acreage shown on the drainage plan does not match the narrative. Revise so that they match.

The lot designations do not match what is shown on the preliminary plan please revise so that they match.

revised

the lot numbers have been revised

Basin C, 0.30 acres, consists of portion of steep slopes of up to 33% that lie adjacent to portions of U.S Highway 24. Similar to **Basin A**, the roadway embankment within **Basin C**, slopes into a soil retention wall that runs along the eastern boundary. Runoff for **Basin C** has been calculated to reach peak flow rates of Q5=0.1 cfs and Q100=1.0 cfs. The limited runoff produced is assumed to be conveyed westward into adjacent **Basin D** as sheet flow.

Basin D, 1.39 acres, consists of Lot 10 along the eastern boundary of the proposed site. Runoff produced within **Basin D** is anticipated to reach peak runoff rates of Q5=6.3 cfs and Q100=11.5 cfs. A proposed private 24" polyethylene storm drain (**Pipe 2**) will be extended to **Design Point 2**(Q5=6.4 cfs and Q100=12.4 cfs) to capture runoff from **Basins C** and **D**. Runoff collected within Pipes 1 and 2 will be routed to a proposed private water quality pond via a private 30" polyethylene storm drain (**Pipe 3**) at peak flow rates of Q5=11.8 cfs and Q100=22.6 cfs. A small riprap pad will be required to reduce velocities prior to entering the pond.

Include in your narrative a discussion regarding the swale shown between basin D and basin I.

swale statement added

Basin E, 1.39 acres, consists of Lot 9 and a portion of the planned private access entrance, which is located adjacent to a portion of Meadowbrook Parkway. Runoff produced within **Basin E** is anticipated to reach peak runoff rates of Q5=6.5 cfs and Q100=11.8 cfs. A proposed private 24" polyethylene storm drain (**Pipe 4**) will be extended from the private pond to collect runoff reaching **Design Point 3**(Q5=5.5 cfs and Q100=10.1 cfs).

Basin F, 0.36 acres, consists of a land (Tract B) which is dedicated to house a proposed private onsite Sand Filter Basin Water Quality Pond (**Pond 1**) adjacent to existing Meadowbrook Parkway. Runoff produced within **Basin F** will ultimately combine with flows entering the pond via **Pipes 3** and **4** at **Design Point 4**. The total flow anticipated to reach the pond (**DP4**) is calculated by the rational method to be Q5=18.2 cfs and Q100=35.0 cfs. Using the UD-Detention worksheet, flows treated via the Sand Filter Basin are to be discharged through a 6.0' x 2.91' CDOT Modified Type D outlet structure and proposed private 24" polyethylene Storm Sewer (Pipe Runs 5, 5.1, 5.2). The proposed pond shall be constructed with 4:1 SS and is anticipated to store 0.095, 0.155 and 0.183 ac-ft and discharge 0.1 cfs, 7.2 cfs, and 15.5 cfs in the water quality, 5 year and 100 year events respectively. The emergency spillway shall be designed to discharge the peak inflow safely to Meadowbrook Parkway in the event that the inlet would become clogged. Runoff conveyed in Pipe 5.2 will combine with flows from a second onsite pond, prior to being discharged downstream via an existing 42" RCP storm sewer.

Basin G, 0.27 acres, consists of a landscaping strip running alongside and adjacent to Meadowbrook Parkway and a small section of pavement associated with site access. Excluding the small section of street the basin consists primarily of trees, bushes/grasses, and decorative ground cover. Low runoff values produced by Basin Q of Q5=0.5 cfs and Q100=1.3 cfs will travel as sheet flow into Meadowbrook Parkway.

revised

Should this be G?

Pipe 7 is indicated as 30" on the drainage plan. Revise accordingly.

30" added

Basin H, 0.71 acres, consists of steep slopes of up to 33% adjacent to portions of U.S Highway 24. The roadway embankment within **Basin H** slopes into a soil retention wall that runs along the south east boundary of the site. Runoff for **Basin H** has been calculated to reach peak flow rates of Q5=0.3 cfs and Q100=2.0 cfs. Flows produced within the basin will be conveyed westward into adjacent basins (**Basin I**) as sheet flow.

Basin I, 2.75 acres, consists of Lots 5 and 6, portions of Lots 2-4 and 7 and section of proposed private street, which is generally located within the center of the proposed site. Runoff produced within **Basin I** is anticipated to reach peak runoff rates of Q5=9.8 cfs and Q100=17.9 cfs. Runoff from the **Basins H** and **I** shall be conveyed via side lot swales and curb and gutter to a proposed private street and a pair of proposed CDOT Type R at grade inlets located at **Design Point 5** (Q5=10.1 cfs and Q100=19.8 cfs). Runoff intercepted by the inlets will be conveyed south to a second proposed water quality pond via proposed private 24" polyethylene **Pipes 6** and **7** at 5 year flow rates of 6.4 cfs and 10.1 cfs and at 100 year flow rates of 10.6 and 16.6 cfs respectively. Runoff bypassing the inlets will continue west within the street to **Design Point 6**.

Lots 7 and 8 have been combined

also includes lot 8

The flow should be greater in pipes 10 and 10.1 as flow from pipe 9 should also be included as stated in your narrative. Revise accordingly.

flow rates corrected in report

Basin J, 1.05 acres, consists of portions of Lots 1, 2 and 7 and a segment of the proposed street, which is located along the western edge of the proposed site. Runoff produced within **Basin J** is anticipated to reach peak runoff rates of Q5=4.4 cfs and Q100=8.0 cfs. Runoff from the **Basins J** and flow-by from **DP5** shall be intercepted by a pair of proposed CDOT Type R at grade inlets located at **Design Point 6** (Q5=4.4 cfs and Q100=11.2 cfs). Runoff intercepted by the proposed inlets will be conveyed south to a second proposed water quality pond via proposed private 18" and 24" polyethylene **Pipes 8** and **9** at 5 year flow rates of 2.8 cfs and 4.4 cfs and at 100 year flow rates of 6.9 and 11.0 cfs respectively. Based upon the preliminary assumptions, approximately 0.1 cfs will bypass DP6 and will be continued within the curb and gutter to the adjacent street in the 100 year event.

Basin K, 0.42 acres, consists of the rear halves of Lots 1 and 2, which is generally located along the southwest corner of the proposed site. Runoff produced within **Basin K** is anticipated to reach peak runoff rates of Q5=1.8 cfs and Q100=3.2 cfs. Runoff from the **Basins K** can be conveyed to a manhole at the southwest corner of Lot 1 which can be fitted with a beehive style grate or inlet. Runoff collected at the local depression would combine with flows in **Pipe 9** and continue to the proposed water quality pipe via pipes 10 and 10.1 at peak flow rates of 2.8 cfs and 4.4 cfs in the 5 and 100 year storm events.

Basin L, 1.32 acres, consists of steep slopes of 32% adjacent to portions of U.S Highway 24. The roadway embankment within **Basin L** slopes into a soil retention wall that runs along the south east boundary of the site. Runoff for **Basin L** has been calculated to reach peak flow rates of Q5=0.5 cfs and Q100=3.5 cfs. Flows produced within the basin will be conveyed westward into adjacent basins (**Basin M**) as sheet flow.

Basin M, 1.84 acres, consists of a portion of Lots 3 and 4, which is generally located along the south and southeast sides of the proposed site. Runoff produced within **Basin M** is anticipated to reach peak runoff rates of Q5=6.7 cfs and Q100=12.2 cfs. Runoff from the **Basins L** and **M** shall be conveyed to a proposed line swale or pipe system that will extend out of proposed WQ Pond 2. Peak runoff reaching **Design Point 8** is anticipated to have peak flow rates of Q5=7.2 cfs and Q100=15.7 cfs. The proposed swale would need to be a minimum of 1.5' deep at 0.5% using a 2' bottom width and 3:1 side slopes. A riprap rundown and pad would need to be required to arrest flows entering the pond. Should a pipe system be extended it would likely be a minimum of 24".

Basin N, 0.47 acres, consists of a land (Tract A) which is dedicated to house a proposed private onsite Sand Filter Basin Water Quality Pond (**Pond 2**) adjacent to existing Meadowbrook Parkway. Runoff produced within **Basin N** will ultimately combine with flows entering the pond via **Pipes 7, 10.1** and from the Swale (**DP8**). The total flow anticipated to reach the pond (**Design Point 9**) is calculated by the rational method to be Q5=18.5 cfs and Q100=38.4 cfs. Using the UD-Detention worksheet, flows treated via the Sand Filter Basin are to be discharged through a 7.0' x 2.91' CDOT Modified Type D outlet structure and proposed private 24" polyethylene Storm Sewer (Pipe Run 11). The proposed pond shall be constructed with 4:1 SS and is anticipated to store 0.120, 0.196 and 0.298 ac-ft and discharge 0.2 cfs, 11.0 cfs, and 23.1 cfs in the water quality, 5 year and 100 year events respectively. The emergency spillway shall be designed to discharge the peak inflow safely to Meadowbrook Parkway in the event that the inlet would become clogged. Runoff conveyed in Pipe 11 will combine with flows within Pipe 5.2, prior to being discharged downstream via an existing 42" RCP storm sewer and into the backside of the existing 10' Type R at grade inlet along existing Woolsey Heights and then to the west via an existing 48" storm sewer.

Basin O, 0.16 acres, consists of a landscaping strip running alongside and adjacent to Meadowbrook Parkway. The basin will most likely be composed of trees, bushes/grasses, and decorative ground cover. Low runoff values produced by **Basin O** of Q5=0.2 cfs and Q100=0.6 cfs will travel as sheet flow into Meadowbrook Parkway.

Basin P, 0.03 acres, consists of steep slopes of up to 33% adjacent to portions of U.S Highway 24. The roadway embankment within **Basin P** slopes into a soil retention wall that runs along the south east boundary of the site. Runoff for **Basin P** has been calculated to reach peak flow rates of Q5=0.0 cfs and Q100=0.1 cfs. Flows produced within the basin will be conveyed westward into adjacent basins (**Basin Q**) as sheet flow.

Basin Q, 0.11 acres, consists of a thin utility corridor alongside the south boundary of the site. The basin will most likely be composed native ground cover. Low runoff values produced by Basin Q of Q5=0.0 cfs and Q100=0.3 cfs will combine with flows from **Basin P** and will discharge to adjacent site to the south as sheet flow.

There are no planned or required improvements to the Sand Creek Drainage Channel with the development of the CLAREMONT COMMERCIAL site.

WATER QUALITY PROVISIONS AND MAINTENANCE

The subject site was previously analyzed within the Final Drainage Report for Claremont Business Park Filing No. 2 prepared by Matrix Design Group approved April 24, 2006. Per Resolution 16-426 of the BoCC, on-site WQCV is required but on-site stormwater detention is not required per the FDR for Claremont Business Park Fil. 2. The water quality volume required for the site has been determined using the UDFCD UD-Detention workbook per the guidelines set forth in the City of Colorado Springs/El Paso County Drainage Criteria Manual - Volume II.

As previously discussed water quality for the site is provided by two proposed Sand Filter Basins (SFB). Pond 1 is designed to treat runoff from approx 5.33 acres, by providing 0.095 acre-feet of water quality storage, while Pond 2 will runoff from approx 8.57 acres, by providing 0.120 acre-feet of water quality storage.

revised will treat runoff

Flows tributary to the two SFBs are released through outlet structures into an existing storm sewer system located along Meadowbrook Parkway. The water quality basins will be private and shall be maintained by the property owner. Access shall be granted to the owner and El Paso County for access and maintenance of the private WQCV facility. A private maintenance agreement document shall accompany the final drainage report(s) submittal(s) which construct the two ponds.

Per County criteria water quality must be provided for 100% of the site. ECM section I.7.1.C.1 indicates that 20% of site, not to exceed 1 acre may be excluded. Provide discussion regarding the proposed basins that will not be treated and ensure that the total will not exceed 1 acre.

statement added as requested

EROSION CONTROL

It is the policy of the El Paso County that we submit a grading and erosion control plan with the drainage report. Proposed silt fence, vehicle traffic control, and concrete washout area are proposed as erosion control measures.

CONSTRUCTION COST OPINION

Private Drainage Facilities (NON-Reimbursable):

Item	Description	Quantity	Unit Cost	Cost
1.	18" PP	48 LF	\$40 /LF	\$1,920.00
2.	24" PP	1327 LF	\$48 /LF	\$63,696.00
3.	30" PP	126 LF	\$65 /LF	\$8,190.00

4.	At Grade Inlets (Type R) L=15'	4	EA	\$7,200	/EA	\$28,800.00
5.	Manholes	5	EA	\$4,000	/EA	\$20,000.00
6.	WQCV Sand Filter Pond	2	EA	\$19,000	/EA	\$38,000.00
						Total \$160,606.00

M & S Civil Consultants, Inc. (M & S) cannot and does not guarantee the construction cost will not vary from these opinions of probable costs. These opinions represent our best judgment as design professionals familiar with the construction industry and this development in particular. The above is only an estimate of the facility cost in 2018.

DRAINAGE & BRIDGE FEES

Please state that drainage fees were previously paid for this property.

This site is in the Sand Creek Drainage Basin. The site is proposed to be subdivided into sixteen commercial lots. Since the property was previously platted as Tract C of Claremont Business Park Filing No. 2 (Reception No. 207712506), no additional Drainage Bridge and/or Pond fees are required. In the appendix, see "Final Drainage Report for Claremont Business Park Filing No. 2", Revised November 2006, by Matrix Design Group, Inc, for previously paid drainage and bridge fees.

added

SUMMARY

the drainage fees section of the Matrix report was not included. Please include in the appendix.

added as requested

Development of Claremont Commercial Subdivision Filing No. 2 will not adversely affect the surrounding development. The proposed drainage facilities will adequately convey, detain and route runoff from the onsite & offsite flows to existing facilities. All drainage facilities described herein and shown on the included Proposed Drainage Map (See Appendix) are subject to change being dependent upon individual lot development. Care will be taken to accommodate overland emergency flow routes on site and temporary drainage conditions.

REFERENCES

- 1.) "El Paso County and City of Colorado Springs Drainage Criteria Manual".
- 2.) "Urban Storm Drainage Criteria Manual"
- 3.) SCS Soils Map for El Paso County.
- 4.) Flood Insurance Rate Map (FIRM), Federal Emergency Management Agency, Effective date December 7, 2018.
- 5.) "Final Drainage Report for Claremont Business Park Filing No. 2", dated November 2006, by Matrix Design Group, Inc.

APPENDIX

VICINITY MAP



VICINITY MAP

N.T.S.



20 BOULDER CRESCENT, SUITE 110
 COLORADO SPRINGS, CO 80903
 PHONE: 719.955.5485

SOILS MAP



CLAREMONT COMMERCIAL FILING NO. 2

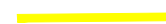
HYDROLOGIC
TYPE A SOILS



HYDROLOGIC
TYPE B SOILS



SITE BOUNDARY



NOT TO SCALE

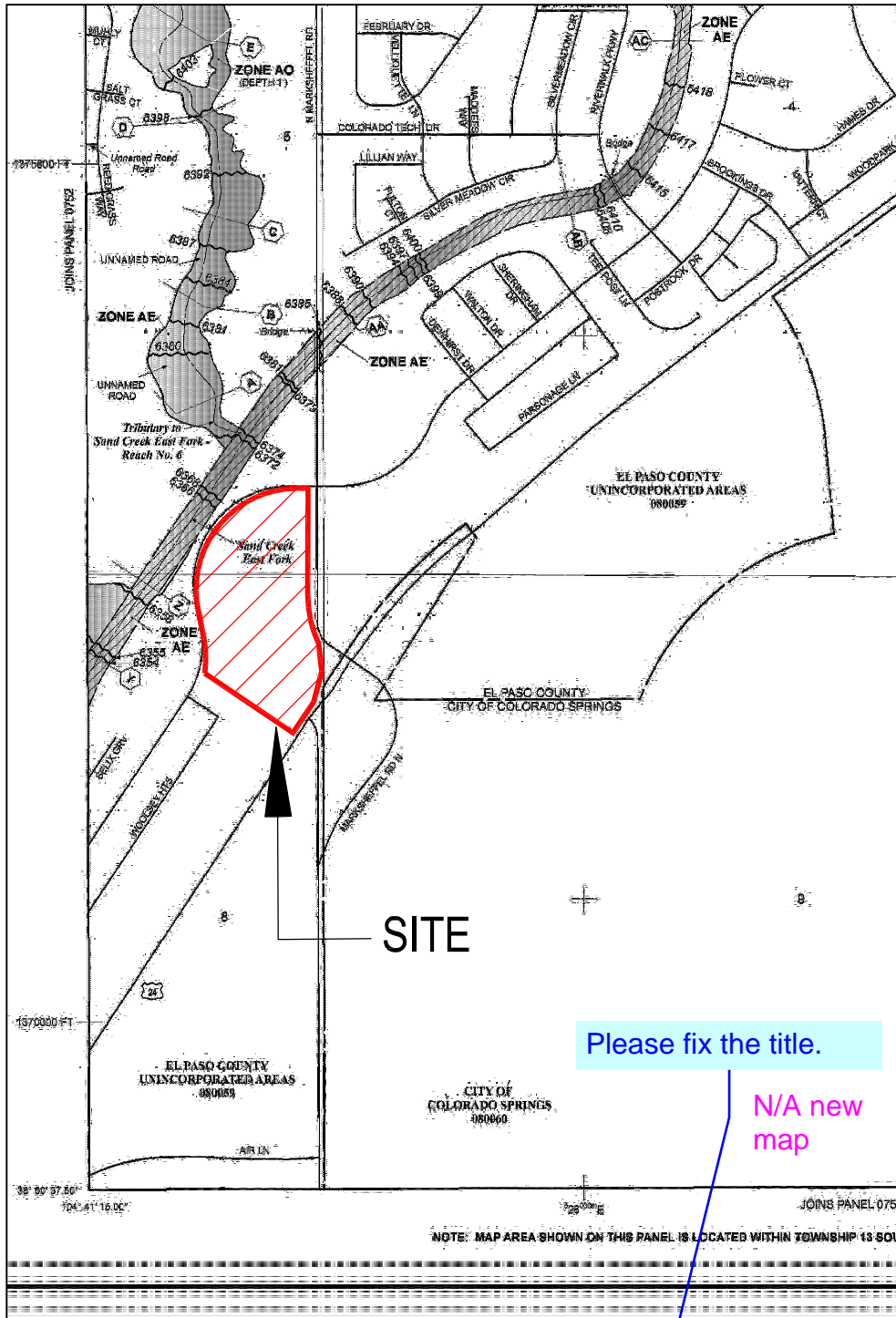
SOILS MAP



Summary by Map Unit — El Paso County Area, Colorado (CO625)

Map unit symbol	Map unit name	Rating
8	Blakeland loamy sand, 1 to 9 percent slopes	A
10	Blendon sandy loam, 0 to 3 percent slopes	B
28	Ellicott loamy coarse sand, 0 to 5 percent slopes	A

FIRM PANEL W/ REVISED LOMR



SITE

Please fix the title.

N/A new map

CLAREMONT COMMERCIAL FILING NO. 3

LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual chance flood (also known as the base flood) is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AD, AR, AP, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.
- ZONE A** - No Base Flood Elevations determined.
- ZONE AE** - Base Flood Elevations determined.
- ZONE AH** - Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** - Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of minimal run flooding, velocities also determined.
- ZONE AR** - Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently dismantled. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AP** - Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** - Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** - Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE
- The floodway is the channel of a stream plus any adjacent floodplain area that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS
- ZONE X** - Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS
- ZONE X** - Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** - Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
- OTHERWISE PROTECTED AREAS (OPAs)
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different base flood elevations, flood depths or flood velocities
- Base Flood Elevation line and value; elevation in feet (EL. 6677)
- Base Flood Elevation value where uniform within zone; elevation in feet
- Referenced to the North American Vertical Datum of 1988 (NAVD 88)
- Cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 1000-meter Universal Transverse Mercator grid lines, zone 13
- 5000-foot grid ticks, Colorado State Plane coordinate system, central zone (FIPS ZONE 0502), Lambert Conformal Conic Projection
- Bench mark (see explanation in Notice to Users section of this FIRM panel)
- River Mile
- MAP REPOSITORIES
- Refer to Map Repository List on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP: MARCH 17, 1997
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL: DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.
- For continuing map revision history prior to countywide mapping, refer to the Community Map Revision Table located in the Flood Insurance Study report for this jurisdiction.
- To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program at 1-800-638-6520.

LEGEND



SITE BOUNDARY

NIP PANEL 0756G

FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 756 OF 1300
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:	NUMBER	PANEL	SUFFIX
COLORADO SERVICE CENTER	0756G	0756	0
EL PASO COUNTY	0756G	0756	0

*Notice to User: The panel number shown above should be used when placing map orders. The Community Number shown above should be used by homeowners and others for the subject community.

MAP NUMBER
08041C0756G

MAP REVISED
DECEMBER 7, 2018
Federal Emergency Management Agency

Please provide a legible FIRM Map

SEE UPDATED FEMA MAP

NOT TO SCALE

FIRM MAP



HYDROLOGIC CALCULATIONS

REVISED TO "AMENDMENT"
TO THE PDR OF
CLAREMONT COMMERCIAL
SUBDIVISION NO. 2

Please update the
title

MDDP CLAREMONT COMMERCIAL FILING NO. 2
PROPOSED DRAINAGE CALCULATIONS
(Area Runoff Coefficient Summary)

BASIN	TOTAL AREA (SF)	TOTAL AREA (Acres)	ROOFS 0.73-0.81 COMMERCIAL AREAS 0.81-0.88 ASPHALT DRIVES 0.90-0.96			LANDSCAPED AREAS 0.16-0.41 GRAVEL STORAGE YARD 0.30-0.50 LIGHT INDUST AREAS 0.59-0.70			PARKS 0.12-0.39 GREENBELTS/AGRI. 0.09-0.36			WEIGHTED	
			AREA (Acres)	C ₅	C ₁₀₀	AREA (Acres)	C ₅	C ₁₀₀	AREA (Acres)	C ₅	C ₁₀₀	C ₅	C ₁₀₀
A	8359.6	0.19	0.00	0.73	0.81	0.00	0.30	0.50	0.19	0.09	0.36	0.09	0.36
B	60660.5	1.39	1.39	0.81	0.88	0.00	0.59	0.70	0.00	0.30	0.50	0.81	0.88
C	13279.8	0.30	0.00	0.81	0.88	0.00	0.59	0.70	0.30	0.09	0.36	0.09	0.36
D	66703.6	1.53	1.53	0.81	0.88	0.00	0.59	0.70	0.00	0.09	0.36	0.81	0.88
E	67533.9	1.55	1.55	0.81	0.88	0.00	0.59	0.70	0.00	0.09	0.36	0.81	0.88
F	15781.4	0.36	0.00	0.73	0.81	0.00	0.30	0.50	0.36	0.12	0.39	0.12	0.39
G	12722.3	0.29	0.06	0.90	0.96	0.23	0.16	0.41	0.00	0.09	0.36	0.32	0.53
H	31099.0	0.71	0.00	0.90	0.96	0.00	0.16	0.41	0.71	0.09	0.36	0.09	0.36
I	119584.6	2.75	2.75	0.81	0.88	0.00	0.30	0.50	0.00	0.12	0.39	0.81	0.88
J	45863.7	1.05	1.05	0.81	0.88	0.00	0.30	0.50	0.00	0.09	0.36	0.81	0.88
K	18476.1	0.42	0.42	0.81	0.88	0.00	0.30	0.50	0.00	0.09	0.36	0.81	0.88
L	57315.2	1.32	0.00	0.81	0.88	0.00	0.30	0.50	1.32	0.09	0.36	0.09	0.36
M	80126.1	1.84	1.84	0.81	0.88	0.00	0.30	0.50	0.00	0.09	0.36	0.81	0.88
N	20642.4	0.47	0.00	0.81	0.88	0.00	0.16	0.41	0.47	0.12	0.39	0.12	0.39
O	6997.2	0.16	0.02	0.90	0.96	0.00	0.30	0.50	0.14	0.12	0.41	0.22	0.48
P	1393.0	0.03	0.00	0.81	0.88	0.00	0.30	0.50	0.03	0.09	0.36	0.09	0.36
Q	4961.4	0.11	0.00	0.90	0.96	0.00	0.30	0.50	0.11	0.09	0.36	0.09	0.36

Calculated by: DLM
Date: 11/19/2019
Checked by: VAS

REVISED TO "AMENDMENT"
TO THE PDR OF
CLAREMONT COMMERCIAL
SUBDIVISION FIL. NO. 2

MDDP CLAREMONT COMMERCIAL FILING NO. 2
PROPOSED DRAINAGE CALCULATIONS
(Area Drainage Summary)

From Area Runoff Coefficient Summary				OVERLAND				STREET / CHANNEL FLOW				Time of Travel (T _i)		INTENSITY *		TOTAL FLOWS	
BASIN	AREA TOTAL (Acres)	C ₅	C ₁₀₀	C ₅	Length (ft)	Height (ft)	T _c (min)	Length (ft)	Slope (%)	Velocity (fps)	T _i (min)	TOTAL (min)	CHECK (min)	I ₅ (in/hr)	I ₁₀₀ (in/hr)	Q ₅ (c.f.s.)	Q ₁₀₀ (c.f.s.)
		From DCM Table 5-1															
A	0.19	0.09	0.36	0.09	40	5.0	5.0	0	0.0%	0.0	0.0	5.0	10.2	5.2	8.7	0.1	0.6
B	1.39	0.81	0.88	0.81	80	1.0	4.4	250	1.6%	2.5	1.7	6.0	11.8	4.9	8.2	5.5	10.1
C	0.30	0.09	0.36	0.09	40	8.0	4.3	0	0.0%	0.0	0.0	4.3	10.2	5.2	8.7	0.1	1.0
D	1.53	0.81	0.88	0.81	60	1.2	3.2	350	2.0%	2.8	2.1	5.3	12.3	5.1	8.5	6.3	11.5
E	1.55	0.81	0.88	0.81	60	1.2	3.2	167	2.0%	2.8	1.0	4.2	11.3	5.2	8.7	6.5	11.8
F	0.36	0.12	0.39	0.12	60	1.2	10.9	30	33.0%	11.5	0.0	10.9	10.5	4.1	6.8	0.2	1.0
G	0.29	0.32	0.53	0.32	25	0.5	5.6	0	0.0%	0.0	0.0	5.6	10.1	5.0	8.4	0.5	1.3
H	0.71	0.09	0.36	0.09	100	17.0	7.2	0	0.0%	0.0	0.0	7.2	10.6	4.6	7.8	0.3	2.0
I	2.75	0.81	0.88	0.81	60	1.2	3.2	425	2.0%	1.4	5.0	8.2	12.7	4.4	7.4	9.8	17.9
J	1.05	0.81	0.88	0.81	60	1.2	3.2	200	2.0%	2.8	1.2	4.4	11.4	5.2	8.7	4.4	8.0
K	0.42	0.81	0.88	0.81	60	1.2	3.2	175	2.0%	2.8	1.0	4.3	11.3	5.2	8.7	1.8	3.2
L	1.32	0.09	0.36	0.09	120	17.0	8.3	0	0.0%	0.0	0.0	8.3	10.7	4.4	7.4	0.5	3.5
M	1.84	0.81	0.88	0.81	100	1.0	5.2	400	1.5%	2.4	2.7	8.0	12.8	4.5	7.5	6.7	12.2
N	0.47	0.12	0.39	0.12	60	1.2	10.9	30	33.0%	11.5	0.0	10.9	10.5	4.1	6.8	0.2	1.3
O	0.16	0.22	0.48	0.22	25	0.5	6.3	0	0.0%	0.0	0.0	6.3	10.1	4.8	8.1	0.2	0.6
P	0.03	0.09	0.36	0.09	120	17.0	8.3	0	0.0%	0.0	0.0	8.3	10.7	4.4	7.4	0.0	0.1
Q	0.11	0.09	0.36	0.09	25	0.5	7.1	0	0.0%	0.0	0.0	7.1	10.1	4.6	7.8	0.0	0.3

* Intensity equations assume a minimum travel time of 5 minutes.

Calculated by: DLM
Date: 11/19/2019
Checked by: VAS

Per DCM ch 6, length of overland flow is max 100 ft. for urban land uses. Revise accordingly.

Revised

REVISED TO "AMENDMENT"
TO THE PDR OF
CLAREMONT COMMERCIAL
SUBDIVISION FIL. NO. 2

MDDP CLAREMONT COMMERCIAL FILING NO. 2
PROPOSED DRAINAGE CALCULATIONS
(Basin Routing Summary)

From Area Runoff Coefficient Summary				OVERLAND				PIPE / CHANNEL FLOW				Time of Travel (T _t)	INTENSITY *		TOTAL FLOWS		COMMENTS
DESIGN POINT	CONTRIBUTING BASINS DPS AND/OR PIPES	CA ₅	CA ₁₀₀	C _s	Length (ft)	Height (ft)	T _c (min)	Length (ft)	Slope (%)	Velocity (fps)	T _t (min)	TOTAL (min)	I ₅ (in/hr)	I ₁₀₀ (in/hr)	Q ₅ (c.f.s.)	Q ₁₀₀ (c.f.s.)	
1	A, B	1.15	1.29	TAKEN FROM BASIN B								6.0	4.9	8.2	5.6	10.6	Proposed PVT 24" Storm Sewer
2	C, D	1.27	1.46	TAKEN FROM BASIN D								5.3	5.1	8.5	6.4	12.4	Proposed PVT 24" Storm Sewer
3	E	1.26	1.36	TAKEN FROM BASIN E (Adj to Min T _c)								5.0	5.2	8.7	6.5	11.8	Proposed PVT 24" Storm Sewer
4	F, DP 1-3	3.71	4.26	TAKEN FROM DESIGN POINT 1								6.0	4.9	8.2	18.2	35.0	PVT Sand Filter Basin FSD Pond 1
5	H, I	2.29	2.67	TAKEN FROM BASIN I								8.2	4.4	7.4	10.1	19.8	10' and 15' Type R Inlets (assumed split flows)
6	J, FB DP5	0.85	1.29	TAKEN FROM BASIN J (Adj to Min T _c)								5.0	5.2	8.7	4.4	11.2	10' and 15' Type R Inlets (assumed split flows)
7	K	0.34	0.37	TAKEN FROM BASIN K (Adj to Min T _c)								5.0	5.2	8.7	1.8	3.2	Manhole w/ Grate
8	L, M	1.61	2.09	TAKEN FROM BASIN M								8.0	4.5	7.5	7.2	15.7	PVT Swale or PVT 24" Storm Sewer
9	DP5, DP7, DP8, N	4.30	5.32	TAKEN FROM DESIGN POINT 8								8.0	4.5	7.5	19.2	40.0	PVT Sand Filter Basin FSD Pond 2

Calculated by: DLM
Date: 11/19/2019
Checked by: VAS

This design point should also include flow from design point 6.

DP 6 was not added to DP 7 as Basin K is the only contributing surface flows to DP 7. DP 4 and DP 9 were updated for clarity to add the pipe outfalls to the DPs.

REVISED TO "AMENDMENT"
TO THE PDR OF
CLAREMONT COMMERCIAL
SUBDIVISION FIL. NO. 2

REVISED **MDDP** CLAREMONT COMMERCIAL FILING NO. 2
pipe run 6
PROPOSED DRAINAGE CALCULATIONS
(Storm Sewer Routing Summary)

PIPE RUN	Contributing Pipes/Design Points	Equivalent CA ₅	Equivalent CA ₁₀₀	Maximum T _C	Intensity*		Flow		Pipe Size
					I ₅	I ₁₀₀	Q ₅	Q ₁₀₀	
1	DP1	1.15	1.29	6.0	5.2	8.7	6.5	11.8	PROP 24" PP
2	DP2	1.27	1.46	5.3	5.1	8.5	6.4	12.4	PROP 24" PP
3	PR1, PR2	2.41	2.75	6.0	4.9	8.2	11.8	22.6	PROP 30" PP
4	DP3	1.26	1.36	5.0	5.2	8.7	6.5	11.8	PROP 24" PP
5	POND 1 OUTFALL	1.48	1.89	6.0	4.9	8.2	7.2	15.5	PROP 24" PP
5.1	PIPE 5	1.48	1.89	6.0	4.9	8.2	7.2	15.5	PROP 24" PP
5.2	PIPE 5.1	1.48	1.89	6.0	4.9	8.2	7.2	15.5	PROP 24" PP
6	INLET 1	1.44	1.43	8.2	4.4	7.4	6.4	10.6	PROP 24" PP
7	PIPE 7, INLET 2	2.28	2.24	8.2	4.4	7.4	10.1	16.6	PROP 30" PP
8	INLET 3	0.55	0.80	5.0	5.2	8.7	2.8	6.9	PROP 18" PP
9	PIPE 8, INLET 4	0.86	1.27	5.0	5.2	8.7	4.4	11.0	PROP 24" PP
10	PIPE 9, DP7	1.20	1.64	5.0	5.2	8.7	6.2	14.3	PROP 24" PP
10.1	PIPE 10	1.20	1.64	5.0	5.2	8.7	6.2	14.3	PROP 24" PP
11	POND 2 OUTFALL	2.45	3.07	8.0	4.5	7.5	11.0	23.1	PROP 30" PP
12	PR5.2, PR11	3.93	4.50	8.0	4.5	7.5	17.6	33.8	PROP 24" PP

* Intensity equations assume a minimum travel time of 5 minutes.

DP - Design Point
PR - Pipe Run

FB- Flow By from Design Point
INT- Intercepted Flow from Design Point

Calculated by: DLM

Date: 11/20/2019

Checked by: VAS

existing 42" pipe?

REVISED

HYDRAULIC CALCULATIONS / SFB WQCV CALCULATIONS

CLAREMONT COMMERCIAL FILING NO. 2 (PROPOSED CONDITIONS)

Weighted Percent Imperviousness of Proposed WQ Sand Filter Basin 1				
Contributing Basins	Area (Acres)	C₅	Impervious % (I)	(Acres)*(I)
<i>A</i>	0.19	0.09	2	0.38
<i>B</i>	1.39	0.81	95	132.29
<i>C</i>	0.30	0.09	2	0.61
<i>D</i>	1.53	0.81	95	145.47
<i>E</i>	1.55	0.81	95	147.28
<i>F</i>	0.36	0.12	7	2.54
Totals	5.33			428.58
Imperviousness % to FSD	80.4			

1.77 A soils 33%
 3.57 B soils 67%
 5.33 total area

Revise title

Revise the title to match the other calculation sheets which indicate Claremont Commercial.....

Revised

Revised

Claremont Bus. Park Filing No. 2

MASTER DEVELOPMENT DRAINAGE PLAN CALCULATIONS **(Pond Volume Calculation)**

WQCV POND 1

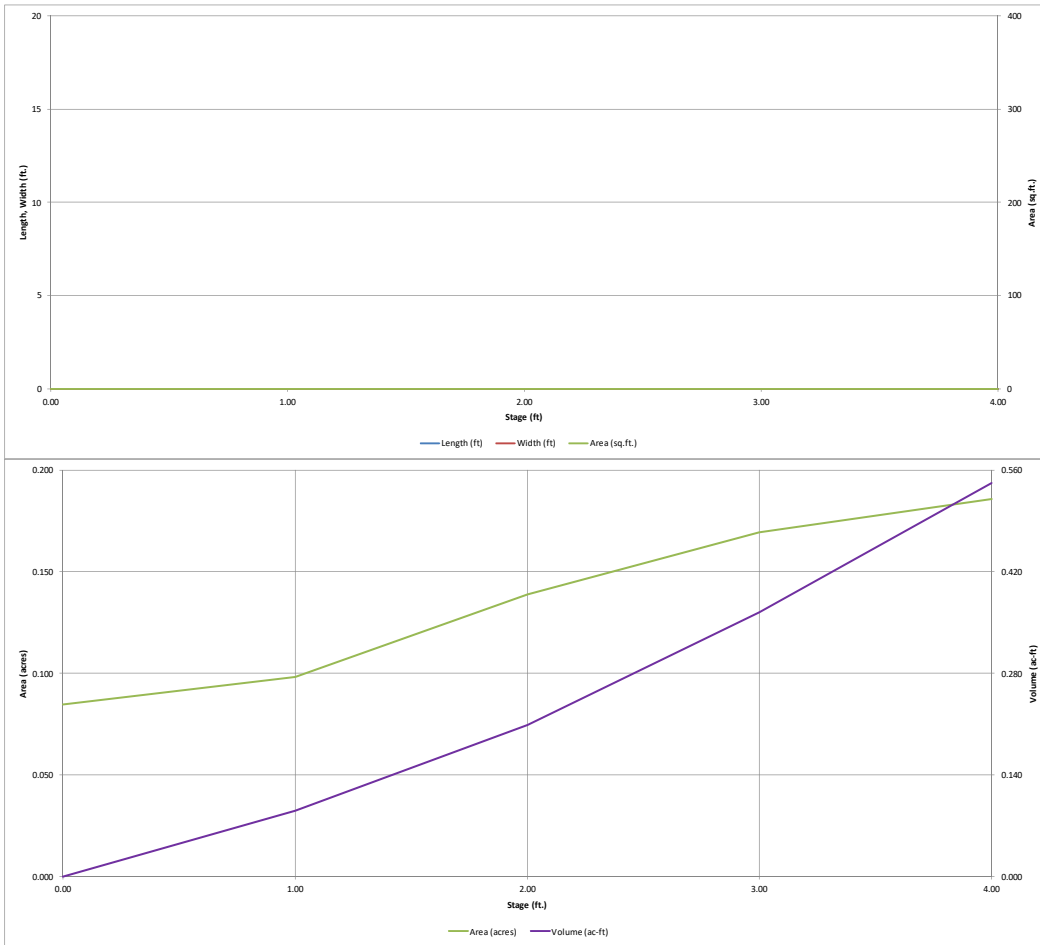
Elevation	SF	CF	Storage	
			AF	Sum
6373.00	3,690.00	0.00	0.00	0.00
6374.00	4,280.00	3,985.00	0.09	0.09
6375.00	6,051.00	5,165.50	0.12	0.21
6376.00	7,382.00	6,716.50	0.15	0.36
6376.50	8,085.00	3,866.75	0.09	0.45

Total = 19,734 CF
 Total = 0.5 Ac-ft

Calculated by: DLM
 Date: 11/20/2019
 Checked by: _____

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

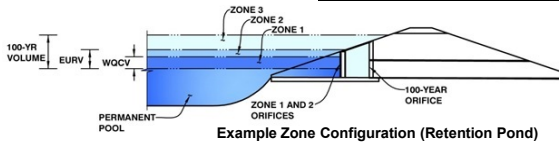
UD-Detention, Version 3.07 (February 2017)



Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Claremont Commercial Filing No. 2
Basin ID: WQ Pond 1



	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.26	0.118	Filtration Media
Zone 2 (100-year)		0.632	Weir&Pipe (Restrict)
Zone 3		0.749	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	2.55	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	1.61	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	0.0	ft ²
Underdrain Orifice Centroid =	0.07	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	N/A	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	N/A	inches
Orifice Plate: Orifice Area per Row =	N/A	inches

Calculated Parameters for Plate

WQ Orifice Area per Row =	N/A	ft ²
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft ²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (optional)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orifice Area (sq. inches)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orifice Area (sq. inches)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =			inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =			ft ²
Vertical Orifice Centroid =			feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Zone 2 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	1.26		ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	6.00		feet
Overflow Weir Slope =	0.00		H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	2.91		feet
Overflow Grate Open Area % =	70%		% grate open area/total area
Debris Clogging % =	50%		%

Calculated Parameters for Overflow Weir

	Zone 2 Weir	Not Selected	
Height of Grate Upper Edge, H ₁ =	1.26		feet
Over Flow Weir Slope Length =	2.91		feet
Grate Open Area / 100-yr Orifice Area =	4.84		should be ≥ 4
Overflow Grate Open Area w/o Debris =	12.22		ft ²
Overflow Grate Open Area w/ Debris =	6.11		ft ²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 2 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	2.69		ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	24.00		inches
Restrictor Plate Height Above Pipe Invert =	18.00		inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Zone 2 Restrictor	Not Selected	
Outlet Orifice Area =	2.53		ft ²
Outlet Orifice Centroid =	0.83		feet
Half-Central Angle of Restrictor Plate on Pipe =	2.09	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage =	2.00	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	15.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

Spillway Design Flow Depth =	0.46	feet
Stage at Top of Freeboard =	3.46	feet
Basin Area at Top of Freeboard =	0.18	acres

Routed Hydrograph Results

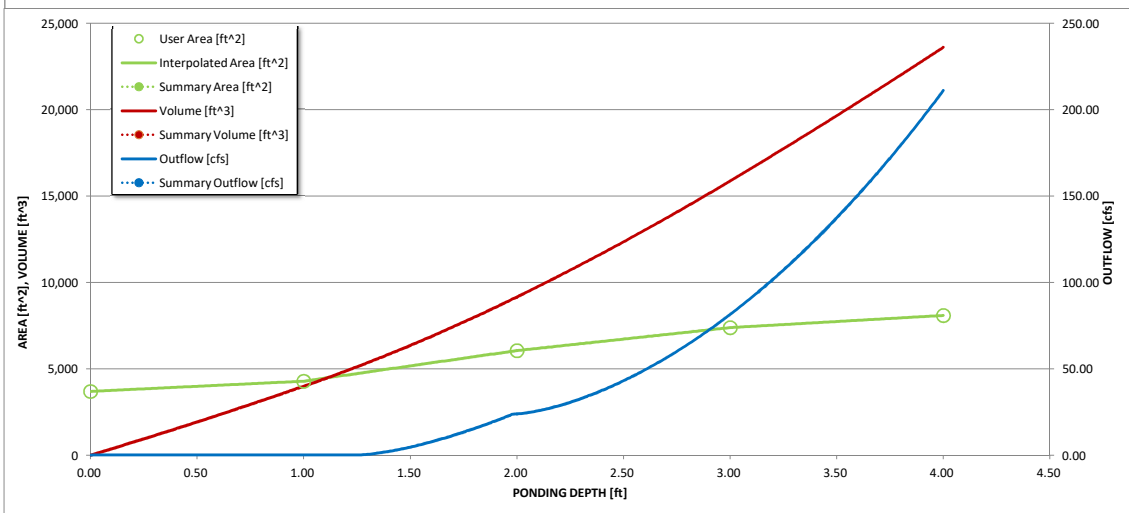
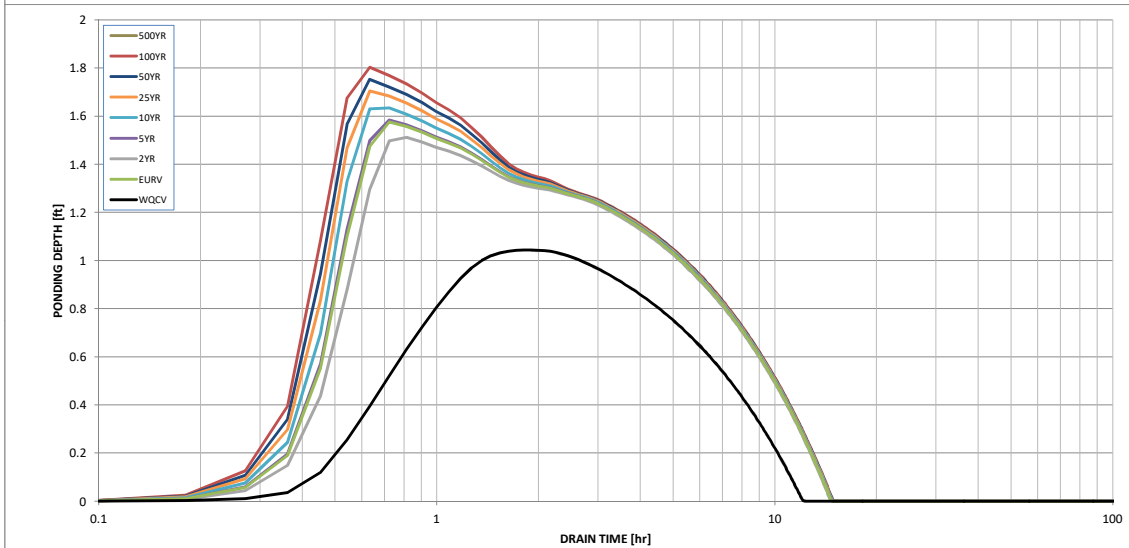
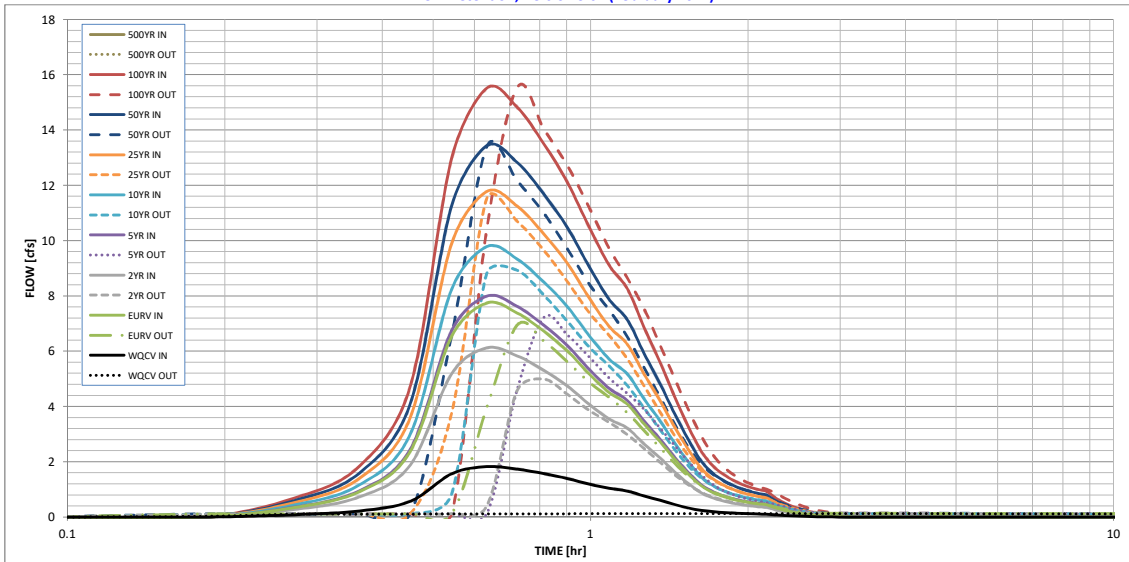
	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period									
One-Hour Rainfall Depth (in)	0.53	1.07	1.19	1.50	1.75	2.00	2.25	2.52	0.00
Calculated Runoff Volume (acre-ft)	0.118	0.505	0.398	0.522	0.640	0.772	0.881	1.021	0.000
OPTIONAL Override Runoff Volume (acre-ft)									
Inflow Hydrograph Volume (acre-ft)	0.117	0.505	0.398	0.521	0.640	0.772	0.881	1.020	#N/A
Predevelopment Unit Peak Flow, q (cfs/acre)	0.00	0.00	0.01	0.01	0.12	0.41	0.62	0.90	0.00
Predevelopment Peak Q (cfs)	0.0	0.0	0.0	0.1	0.7	2.2	3.3	4.8	0.0
Peak Inflow Q (cfs)	1.8	7.7	6.1	8.0	9.8	11.8	13.4	15.5	#N/A
Peak Outflow Q (cfs)	0.1	6.9	5.0	7.2	8.9	11.5	13.4	15.5	#N/A
Ratio Peak Outflow to Predevelopment Q	N/A	N/A	N/A	95.8	13.5	5.2	4.1	3.2	#N/A
Structure Controlling Flow	Filtration Media	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1
Max Velocity through Grate 1 (fps)	N/A	0.54	0.37	0.5	0.7	0.9	1.0	1.2	#N/A
Max Velocity through Grate 2 (fps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	#N/A
Time to Drain 97% of Inflow Volume (hours)	12	13	13	13	13	12	12	12	#N/A
Time to Drain 99% of Inflow Volume (hours)	12	14	14	14	14	14	14	14	#N/A
Maximum Ponding Depth (ft)	1.04	1.58	1.51	1.58	1.63	1.70	1.75	1.80	#N/A
Area at Maximum Ponding Depth (acres)	0.10	0.12	0.12	0.12	0.12	0.13	0.13	0.13	#N/A
Maximum Volume Stored (acre-ft)	0.095	0.154	0.147	0.155	0.161	0.170	0.177	0.183	#N/A

ADDED

*Provide note indicating that per resolution 16-426 of the BoCC, on-site WQCV is required but on-site stormwater detention is not required per the FDR for Claremont Business Park Fil. 2. This has been requested on previous projects you've done in this area.

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

CLAREMONT COMMERCIAL FILING NO. 2 (PROPOSED CONDITIONS)

Weighted Percent Imperviousness of Proposed WQ Sand Filter Basin 2				
Contributing Basins	Area (Acres)	C₅	Impervious % (I)	(Acres)*(I)
<i>H</i>	0.71	0.09	2	1.43
<i>I</i>	2.75	0.81	95	260.80
<i>J</i>	1.05	0.81	95	100.02
<i>K</i>	0.42	0.81	2	0.85
<i>L</i>	1.32	0.09	2	2.63
<i>M</i>	1.84	0.81	95	174.75
<i>N</i>	0.47	0.12	7	3.32
Totals	8.57			543.80
Imperviousness of WQ Pond 2	63.5			

8.57 B soils
8.57 total area

Claremont Commercial Filing No.2
DRAINAGE REPORT DRAINAGE CALCULATIONS
(Pond Volume Calculation)

WQCV POND 2

Elevation	SF	CF	Storage	
			AF	Sum
6365.50	3,292.00	0.00	0.00	0.00
6366.00	3,840.00	1,783.00	0.04	0.04
6367.00	5,015.00	4,427.50	0.10	0.14
6368.00	6,290.00	5,652.50	0.13	0.27
6369.00	7,665.00	6,977.50	0.16	0.43
Total =		<u>18,841</u> CF		
		Total =	<u>0.4</u> Ac-ft	

Calculated by: DLM
Date: 3/20/2017
Checked by: _____

based on the soils map provided, the soil group for this pond should be "A"

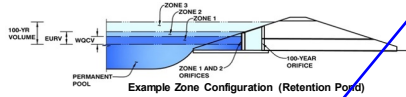
Updated

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention Version 3.07 (February 2017)

Project: **Claremont Commercial Fil No. 2**

Basin ID: **WQ Pond 2**



Required Volume Calculation

Selected BMP Type =	SF	
Watershed Area =	8.57	acres
Watershed Length =	665	ft
Watershed Slope =	0.018	ft/ft
Watershed Imperviousness =	63.50%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Desired WQCV Drain Time =	12.0	hours
Location for 1-hr Rainfall Depths =	User Input	
Water Quality Capture Volume (WQCV) =	0.142	acre-feet
Excess Urban Runoff Volume (EURV) =	0.593	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.490	acre-feet
5-yr Runoff Volume (P1 = 1.5 in.) =	0.656	acre-feet
10-yr Runoff Volume (P1 = 1.75 in.) =	0.846	acre-feet
25-yr Runoff Volume (P1 = 2 in.) =	1.097	acre-feet
50-yr Runoff Volume (P1 = 2.25 in.) =	1.278	acre-feet
100-yr Runoff Volume (P1 = 2.52 in.) =	1.516	acre-feet
500-yr Runoff Volume (P1 = 0 in.) =	0.000	acre-feet
Approximate 2-yr Detention Volume =	0.459	acre-feet
Approximate 5-yr Detention Volume =	0.616	acre-feet
Approximate 10-yr Detention Volume =	0.788	acre-feet
Approximate 25-yr Detention Volume =	0.850	acre-feet
Approximate 50-yr Detention Volume =	0.885	acre-feet
Approximate 100-yr Detention Volume =	0.960	acre-feet

Optional User Override 1-hr Precipitation	1.19	inches
	1.50	inches
	1.75	inches
	2.00	inches
	2.25	inches
	2.52	inches
		inches

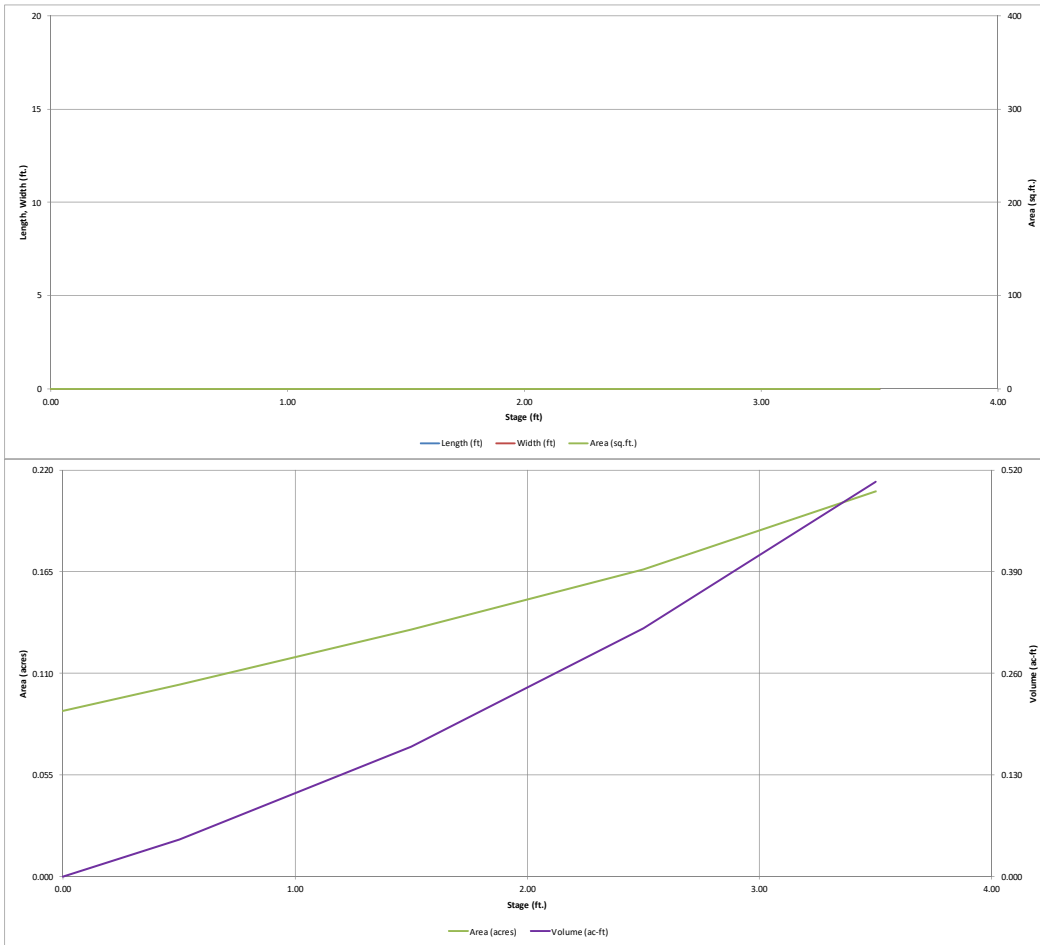
Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.142	acre-feet
Zone 2 Volume (100-year - Zone 1) =	0.818	acre-feet
Select Zone 3 Storage Volume (Optional) =		acre-feet
Total Detention Basin Volume =	0.960	acre-feet
Initial Surcharge Volume (SV) =	user	ft ³
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H _{total}) =	user	ft
Depth of Trickle Channel (H _{tc}) =	user	ft
Slope of Trickle Channel (S _{tc}) =	user	ft/ft
Slopes of Main Basin Sides (S _{mb}) =	user	H:V
Basin Length-to-Width Ratio (R _{l,w}) =	user	
Initial Surcharge Area (A _{sv}) =	user	ft ²
Surcharge Volume Length (L _{sv}) =	user	ft
Surcharge Volume Width (W _{sv}) =	user	ft
Depth of Basin Floor (H _{100yr}) =	user	ft
Length of Basin Floor (L _{100yr}) =	user	ft
Width of Basin Floor (W _{100yr}) =	user	ft
Area of Basin Floor (A _{100yr}) =	user	ft ²
Volume of Basin Floor (V _{100yr}) =	user	ft ³
Depth of Main Basin (H _{mb}) =	user	ft
Length of Main Basin (L _{mb}) =	user	ft
Width of Main Basin (W _{mb}) =	user	ft
Area of Main Basin (A _{mb}) =	user	ft ²
Volume of Main Basin (V _{mb}) =	user	ft ³
Calculated Total Basin Volume (V _{total}) =	user	acre-feet

Depth Increment =	ft	Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft ²)	Optional Override Area (ft ²)	Area (acre)	Volume (ft ³)	Volume (ac-ft)
65.5		Media Surface	--	0.00	--	--	--	3,907	0.090		
66			--	0.50	--	--	4,521	0.104	2,062	0.047	
67			--	1.50	--	--	5,829	0.134	7,224	0.166	
68.00			--	2.50	--	--	7,244	0.166	13,818	0.317	
69.00			--	3.50	--	--	9,079	0.208	21,980	0.505	

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

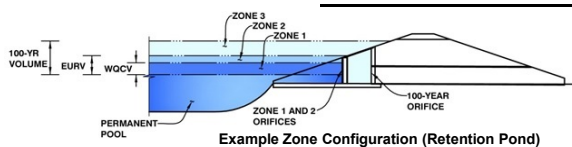


Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Claremont Commerical Fil No. 2

Basin ID: WQ Pond 2



	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.31	0.142	Filtration Media
Zone 2 (100-year)		0.818	Weir&Pipe (Restrict)
Zone 3		0.960	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	2.65	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	1.75	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	0.0	ft ²
Underdrain Orifice Centroid =	0.07	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	N/A	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	N/A	inches
Orifice Plate: Orifice Area per Row =	N/A	inches

Calculated Parameters for Plate

WQ Orifice Area per Row =	N/A	ft ²
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft ²

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (optional)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orifice Area (sq. inches)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orifice Area (sq. inches)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =			inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =			ft ²
Vertical Orifice Centroid =			feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Zone 2 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	1.31		ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	7.00		feet
Overflow Weir Slope =	0.00		H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	2.91		feet
Overflow Grate Open Area % =	70%		% grate open area/total area
Debris Clogging % =	50%		%

Calculated Parameters for Overflow Weir

	Zone 2 Weir	Not Selected	
Height of Grate Upper Edge, H ₁ =	1.31		feet
Over Flow Weir Slope Length =	2.91		feet
Grate Open Area / 100-yr Orifice Area =	6.41		should be ≥ 4
Overflow Grate Open Area w/o Debris =	14.26		ft ²
Overflow Grate Open Area w/ Debris =	7.13		ft ²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 2 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	3.00		ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	24.00		inches
Restrictor Plate Height Above Pipe Invert =	16.00		inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Zone 2 Restrictor	Not Selected	
Outlet Orifice Area =	2.22		ft ²
Outlet Orifice Centroid =	0.75		feet
Half-Central Angle of Restrictor Plate on Pipe =	1.91	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage =	2.50	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	20.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

Spillway Design Flow Depth =	0.57	feet
Stage at Top of Freeboard =	4.07	feet
Basin Area at Top of Freeboard =	0.21	acres

Routed Hydrograph Results

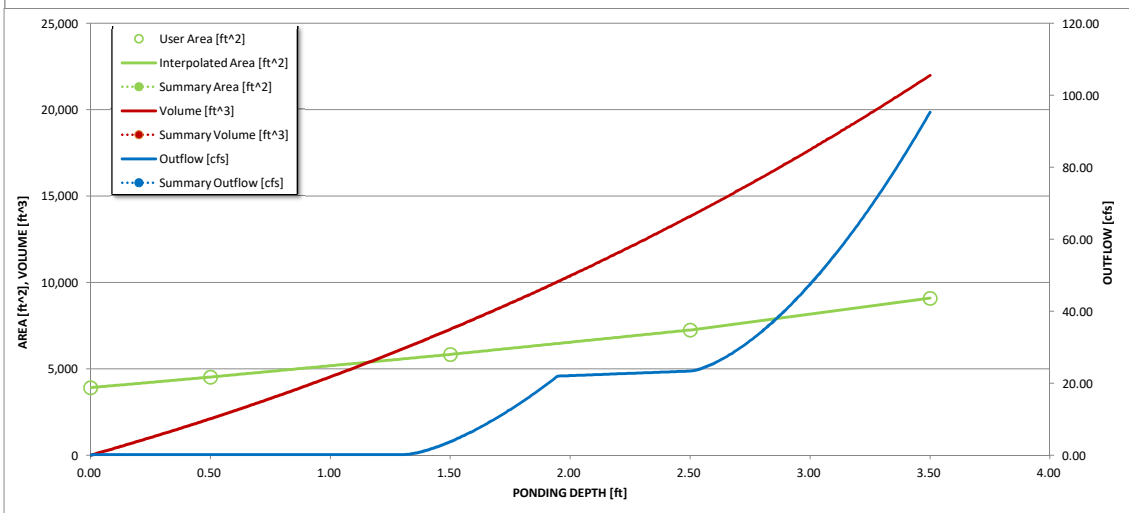
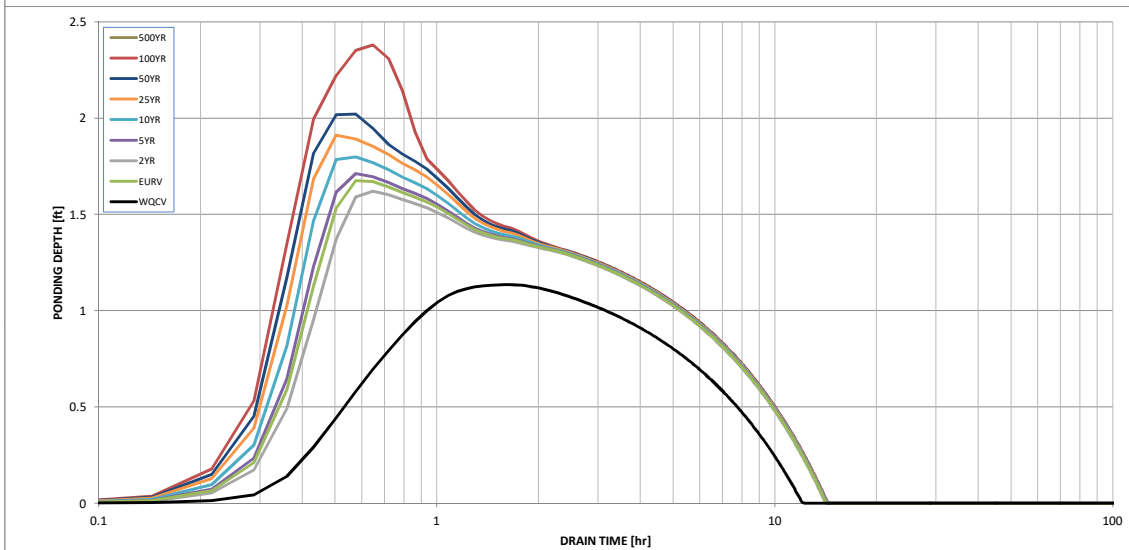
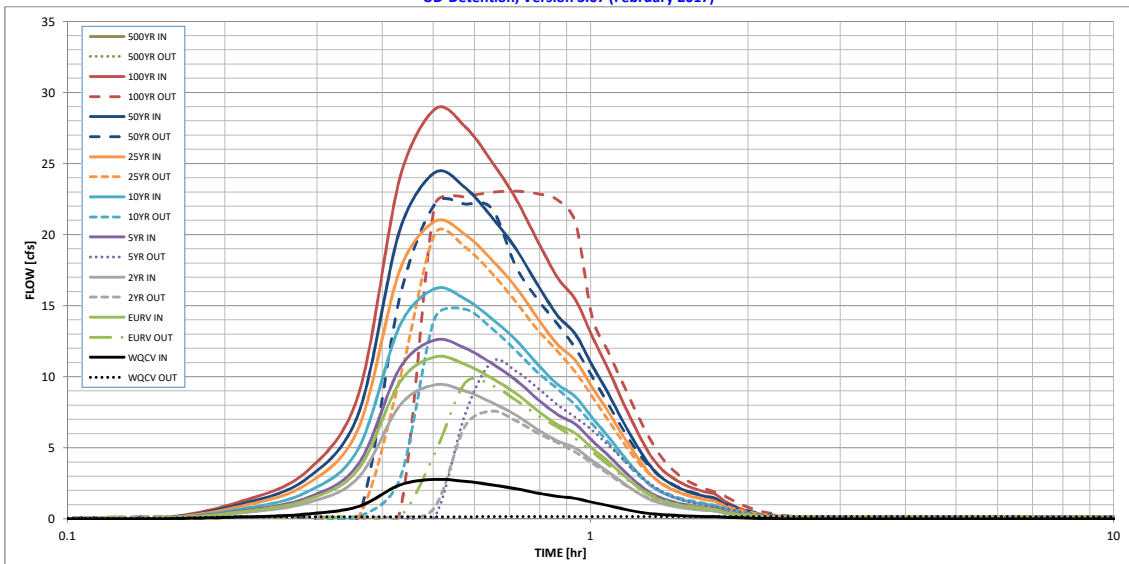
	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period									
One-Hour Rainfall Depth (in)	0.53	1.07	1.19	1.50	1.75	2.00	2.25	2.52	0.00
Calculated Runoff Volume (acre-ft)	0.142	0.593	0.490	0.656	0.846	1.097	1.278	1.516	0.000
OPTIONAL Override Runoff Volume (acre-ft)									
Inflow Hydrograph Volume (acre-ft)	0.141	0.593	0.489	0.655	0.845	1.096	1.277	1.515	#N/A
Predevelopment Unit Peak Flow, q (cfs/acre)	0.00	0.00	0.01	0.03	0.25	0.79	1.10	1.46	0.00
Predevelopment Peak Q (cfs)	0.0	0.0	0.1	0.2	2.1	6.8	9.4	12.5	0.0
Peak Inflow Q (cfs)	2.8	11.4	9.4	12.6	16.2	20.9	24.4	28.8	#N/A
Peak Outflow Q (cfs)	0.2	9.6	7.6	11.0	14.7	20.0	22.1	23.1	#N/A
Ratio Peak Outflow to Predevelopment Q	N/A	N/A	N/A	61.3	6.9	3.0	2.4	1.8	#N/A
Structure Controlling Flow	Filtration Media	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Outlet Plate 1	Outlet Plate 1	#N/A
Max Velocity through Grate 1 (fps)	N/A	0.62	0.49	0.7	1.0	1.4	1.5	1.6	#N/A
Max Velocity through Grate 2 (fps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	#N/A
Time to Drain 97% of Inflow Volume (hours)	12	13	13	13	12	11	11	10	#N/A
Time to Drain 99% of Inflow Volume (hours)	12	14	14	14	14	13	13	13	#N/A
Maximum Ponding Depth (ft)	1.13	1.67	1.62	1.71	1.80	1.91	2.02	2.38	#N/A
Area at Maximum Ponding Depth (acres)	0.12	0.14	0.14	0.14	0.14	0.15	0.15	0.16	#N/A
Maximum Volume Stored (acre-ft)	0.120	0.190	0.183	0.196	0.207	0.225	0.241	0.298	#N/A

ADDED

*Provide note indicating that per resolution 16-426 of the BoCC, on-site WQCV is required but on-site stormwater detention is not required per the FDR for Claremont Business Park Fil. 2. This has been requested on previous projects you've done in this area.

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

Worksheet for Pipe 1

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	11.80 cfs
Results	
Normal Depth	15.3 in
Flow Area	2.1 ft ²
Wetted Perimeter	3.7 ft
Hydraulic Radius	6.9 in
Top Width	1.92 ft
Critical Depth	14.8 in
Percent Full	63.9 %
Critical Slope	0.006 ft/ft
Velocity	5.57 ft/s
Velocity Head	0.48 ft
Specific Energy	1.76 ft
Froude Number	0.935
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.003 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	0.0 %
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	15.3 in
Critical Depth	14.8 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Pipe 2

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	12.40 cfs
Results	
Normal Depth	15.9 in
Flow Area	2.2 ft ²
Wetted Perimeter	3.8 ft
Hydraulic Radius	7.0 in
Top Width	1.89 ft
Critical Depth	15.2 in
Percent Full	66.1 %
Critical Slope	0.006 ft/ft
Velocity	5.62 ft/s
Velocity Head	0.49 ft
Specific Energy	1.81 ft
Froude Number	0.918
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.003 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	0.0 %
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	15.9 in
Critical Depth	15.2 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Pipe 3

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	30.0 in
Discharge	22.60 cfs
Results	
Normal Depth	19.9 in
Flow Area	3.5 ft ²
Wetted Perimeter	4.8 ft
Hydraulic Radius	8.7 in
Top Width	2.36 ft
Critical Depth	19.4 in
Percent Full	66.4 %
Critical Slope	0.005 ft/ft
Velocity	6.53 ft/s
Velocity Head	0.66 ft
Specific Energy	2.32 ft
Froude Number	0.952
Maximum Discharge	31.20 cfs
Discharge Full	29.00 cfs
Slope Full	0.003 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	33.8 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	19.9 in
Critical Depth	19.4 in
Channel Slope	0.005 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for Pipe 4

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	11.80 cfs
Results	
Normal Depth	15.3 in
Flow Area	2.1 ft ²
Wetted Perimeter	3.7 ft
Hydraulic Radius	6.9 in
Top Width	1.92 ft
Critical Depth	14.8 in
Percent Full	63.9 %
Critical Slope	0.006 ft/ft
Velocity	5.57 ft/s
Velocity Head	0.48 ft
Specific Energy	1.76 ft
Froude Number	0.935
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.003 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	33.8 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	15.3 in
Critical Depth	14.8 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Pipe 5

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	15.50 cfs
Results	
Normal Depth	19.0 in
Flow Area	2.7 ft ²
Wetted Perimeter	4.4 ft
Hydraulic Radius	7.3 in
Top Width	1.62 ft
Critical Depth	17.0 in
Percent Full	79.3 %
Critical Slope	0.006 ft/ft
Velocity	5.80 ft/s
Velocity Head	0.52 ft
Specific Energy	2.11 ft
Froude Number	0.796
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.005 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	33.8 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	19.0 in
Critical Depth	17.0 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Pipe 5.1

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	15.50 cfs
Results	
Normal Depth	19.0 in
Flow Area	2.7 ft ²
Wetted Perimeter	4.4 ft
Hydraulic Radius	7.3 in
Top Width	1.62 ft
Critical Depth	17.0 in
Percent Full	79.3 %
Critical Slope	0.006 ft/ft
Velocity	5.80 ft/s
Velocity Head	0.52 ft
Specific Energy	2.11 ft
Froude Number	0.796
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.005 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	33.8 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	19.0 in
Critical Depth	17.0 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Pipe 5.2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	15.50 cfs
Results	
Normal Depth	19.0 in
Flow Area	2.7 ft ²
Wetted Perimeter	4.4 ft
Hydraulic Radius	7.3 in
Top Width	1.62 ft
Critical Depth	17.0 in
Percent Full	79.3 %
Critical Slope	0.006 ft/ft
Velocity	5.80 ft/s
Velocity Head	0.52 ft
Specific Energy	2.11 ft
Froude Number	0.796
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.005 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	33.8 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	19.0 in
Critical Depth	17.0 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Pipe 6

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	10.60 cfs
Results	
Normal Depth	14.3 in
Flow Area	1.9 ft ²
Wetted Perimeter	3.5 ft
Hydraulic Radius	6.6 in
Top Width	1.96 ft
Critical Depth	14.0 in
Percent Full	59.5 %
Critical Slope	0.005 ft/ft
Velocity	5.44 ft/s
Velocity Head	0.46 ft
Specific Energy	1.65 ft
Froude Number	0.964
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.002 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	33.8 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	14.3 in
Critical Depth	14.0 in
Channel Slope	0.005 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for Pipe 7

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	30.0 in
Discharge	16.60 cfs
Results	
Normal Depth	16.3 in
Flow Area	2.7 ft ²
Wetted Perimeter	4.1 ft
Hydraulic Radius	7.9 in
Top Width	2.49 ft
Critical Depth	16.5 in
Percent Full	54.2 %
Critical Slope	0.005 ft/ft
Velocity	6.11 ft/s
Velocity Head	0.58 ft
Specific Energy	1.94 ft
Froude Number	1.031
Maximum Discharge	31.20 cfs
Discharge Full	29.00 cfs
Slope Full	0.002 ft/ft
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	54.2 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	16.3 in
Critical Depth	16.5 in
Channel Slope	0.005 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for Pipe 8

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	18.0 in
Discharge	6.90 cfs
Results	
Normal Depth	13.7 in
Flow Area	1.4 ft ²
Wetted Perimeter	3.2 ft
Hydraulic Radius	5.4 in
Top Width	1.28 ft
Critical Depth	12.2 in
Percent Full	76.2 %
Critical Slope	0.007 ft/ft
Velocity	4.77 ft/s
Velocity Head	0.35 ft
Specific Energy	1.50 ft
Froude Number	0.791
Maximum Discharge	7.99 cfs
Discharge Full	7.43 cfs
Slope Full	0.004 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	45.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	13.7 in
Critical Depth	12.2 in
Channel Slope	0.005 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for Pipe 9

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	11.00 cfs
Results	
Normal Depth	14.6 in
Flow Area	2.0 ft ²
Wetted Perimeter	3.6 ft
Hydraulic Radius	6.7 in
Top Width	1.95 ft
Critical Depth	14.3 in
Percent Full	60.9 %
Critical Slope	0.005 ft/ft
Velocity	5.49 ft/s
Velocity Head	0.47 ft
Specific Energy	1.69 ft
Froude Number	0.955
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.002 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	45.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	14.6 in
Critical Depth	14.3 in
Channel Slope	0.005 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for Pipe 10

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	14.30 cfs
Results	
Normal Depth	17.7 in
Flow Area	2.5 ft ²
Wetted Perimeter	4.1 ft
Hydraulic Radius	7.2 in
Top Width	1.76 ft
Critical Depth	16.3 in
Percent Full	73.8 %
Critical Slope	0.006 ft/ft
Velocity	5.76 ft/s
Velocity Head	0.52 ft
Specific Energy	1.99 ft
Froude Number	0.854
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.004 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	45.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	17.7 in
Critical Depth	16.3 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Pipe 10.1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	24.0 in
Discharge	14.30 cfs
Results	
Normal Depth	17.7 in
Flow Area	2.5 ft ²
Wetted Perimeter	4.1 ft
Hydraulic Radius	7.2 in
Top Width	1.76 ft
Critical Depth	16.3 in
Percent Full	73.8 %
Critical Slope	0.006 ft/ft
Velocity	5.76 ft/s
Velocity Head	0.52 ft
Specific Energy	1.99 ft
Froude Number	0.854
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.004 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	45.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	17.7 in
Critical Depth	16.3 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Pipe 11

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	30.0 in
Discharge	23.10 cfs
Results	
Normal Depth	20.2 in
Flow Area	3.5 ft ²
Wetted Perimeter	4.8 ft
Hydraulic Radius	8.8 in
Top Width	2.34 ft
Critical Depth	19.6 in
Percent Full	67.4 %
Critical Slope	0.005 ft/ft
Velocity	6.56 ft/s
Velocity Head	0.67 ft
Specific Energy	2.35 ft
Froude Number	0.943
Maximum Discharge	31.20 cfs
Discharge Full	29.00 cfs
Slope Full	0.003 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	49.6 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	20.2 in
Critical Depth	19.6 in
Channel Slope	0.005 ft/ft
Critical Slope	0.005 ft/ft

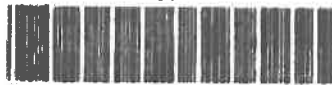
Worksheet for Pipe 12

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	42.0 in
Discharge	33.80 cfs
Results	
Normal Depth	20.4 in
Flow Area	4.6 ft ²
Wetted Perimeter	5.4 ft
Hydraulic Radius	10.3 in
Top Width	3.50 ft
Critical Depth	21.6 in
Percent Full	48.5 %
Critical Slope	0.004 ft/ft
Velocity	7.30 ft/s
Velocity Head	0.83 ft
Specific Energy	2.53 ft
Froude Number	1.119
Maximum Discharge	76.52 cfs
Discharge Full	71.14 cfs
Slope Full	0.001 ft/ft
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	48.5 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	20.4 in
Critical Depth	21.6 in
Channel Slope	0.005 ft/ft
Critical Slope	0.004 ft/ft

BOCC RESOLUTION 16-426

502
Chuck Broerman
11/28/2016 11:50:04 AM
Doc \$0.00 2
Rec \$0.00 Pages

EL PASO COUNTY, W



216137149

RESOLUTION NO. 16- 426

**BOARD OF COUNTY COMMISSIONERS
COUNTY OF EL PASO, STATE OF COLORADO**

Resolution Denying an Appeal by Hammers Construction LLC (APP-16-002) of the Administrative Determination made by the Planning and Community Development Department Executive Director regarding the requirement for permanent/post construction Water Quality (permanent stormwater quality best management practices or BMP's).

WHEREAS, pursuant to §§30-11-101(1)(e) and 30-11-107(1)(e), C.R.S., the Board of County Commissioners of El Paso County, Colorado (hereinafter "Board") has the legislative authority to manage the concerns of El Paso County when deemed by the Board to be in the best interests of the County and its inhabitants; and

WHEREAS, after consultation with the County Attorney's Office, the Executive Director of Planning and Community Development on August 4, 2016 issued an administrative determination finding made an administrative determination that all undeveloped lots within the Claremont Business Park are subject to installation of permanent stormwater management best management practices (BMP's) associated with development, and that the terms of a 2008 approved deviation relieving the developer of the requirements have not been met.; and

WHEREAS, an appeal of the administrative determination was filed by Hammers Construction on August 10, 2016, and a hearing date was set for September 27, 2016 to hear the appeal; and

WHEREAS, the hearing was continued to a date certain of November 22, 2016; and

WHEREAS, at the Applicant's appeal hearing on November 22, 2016, testimony from the Applicant and the Applicant's representatives was heard by the Board in favor of the appeal, testimony from representatives of Planning and Community Development Department and was presented, and such testimony and associated evidence was weighed by the Board; and

WHEREAS, the Board, having reviewed the testimony and evidence, hereby finds and determines that the requested appeal of the administrative determination by the Planning and Community Development Executive Director by the Applicant did not satisfy the criteria of approval to overturn the administrative determination.

NOW, THEREFORE, BE IT RESOLVED that the Board of County Commissioners of El Paso County, Colorado, hereby denies the appeal of the administrative determination by Hammers Construction and determines that permanent stormwater management best management practices (BMP's) are required with new development within the Claremont Business Park: and

BE IT FURTHER RESOLVED that Sallie Clark, duly elected, qualified member and Chair of the Board of County Commissioners, or Darryl Glenn, duly elected, qualified member and Vice Chair of the Board of County Commissioners, be and is hereby authorized on behalf of the Board to execute any and all documents necessary to carry out the intent of the Board as described herein.

DONE THIS 22nd day of November, 2016, at Colorado Springs Colorado.

**BOARD OF COUNTY COMMISSIONERS
EL PASO COUNTY, COLORADO**

ATTEST:  *Christina D. Broerman*
County Clerk & Recorder

By: *Sallie Clark*
Chair of the Board

EXISTING DRAINAGE MAP



FINAL DRAINAGE REPORT

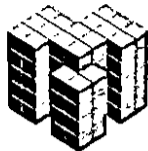
For

“Claremont Business Park Filing No. 2”

Prepared for:
El Paso County
Department of Public Works
Engineering Division

On Behalf of:
Claremont Development, Inc.

Prepared by:



Matrix Design Group, Inc.
Integrated Design Solutions *Infrastructure Engineering*
Community Development
Program Management

2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
(719) 575-0100
fax (719) 572-0208

Revised November 2006

Engineer's Statement:

The *revisions* (changes made to the base Final Drainage Report since July, 2006) to the attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. The revisions encompassed adding additional right of way to the study area at the County's request, the handling of offsite drainage due to the additional right of way, a breakdown of private drainage within lot numbers 10 through 25 of Filing No. 2 due to cross-lot drainage (contrary to note # 25 on the recorded plat), profiling additional inlets along the channel edge, and rip-rap sizing for outlet structures along the channel. The Final Drainage Report dated July, 2006 was prepared under the direct supervision of Richard G. Gallegos, Jr. in July, 2006 and stamped (see next sheet).

The Final Drainage Report was prepared according to the criteria established by the County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing the *revisions* to this report.

Brady A. Shyrock
Registered Professional Engineer
State of Colorado
No. 38164

SEAL

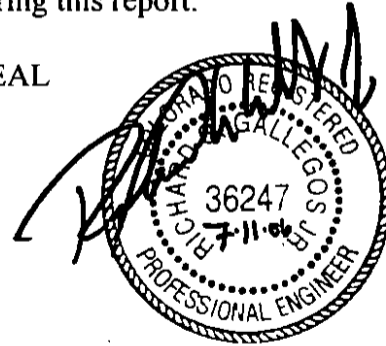


Engineer's Statement:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

SEAL

Richard G. Gallegos, Jr.
Registered Professional Engineer
State of Colorado
No. 36247



Developer's Statement:

I, the developer have read and will comply with all of the requirements specified in this drainage report and plan.

Claremont Development, Inc.
Business Name

By: _____

Title: _____

Address: 3460 Capital Drive
Colorado Springs, CO 80915

El Paso County:

Filed in accordance with Section 51.1 of the El Paso Land Development Code, as amended.

John Hamacher
Mr. John McCarty, County Engineer/Director

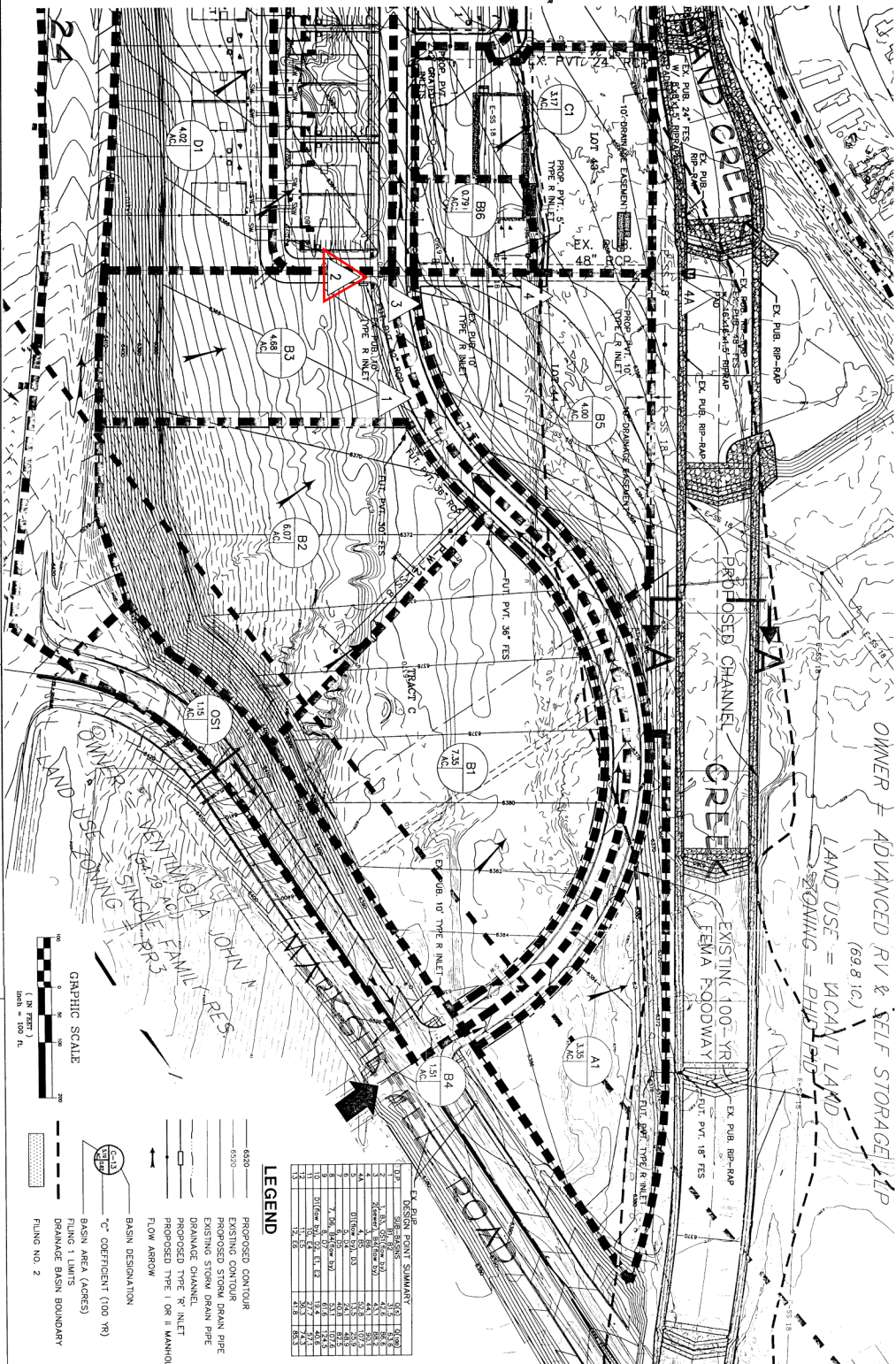
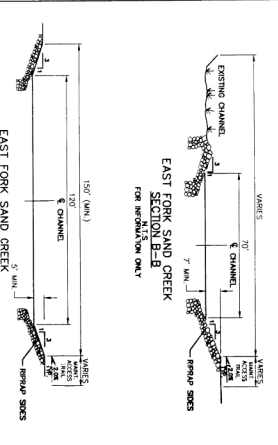
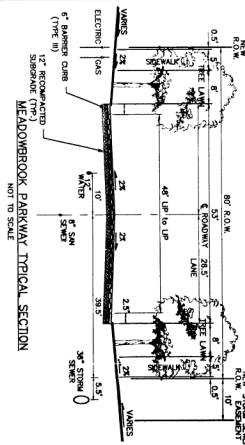
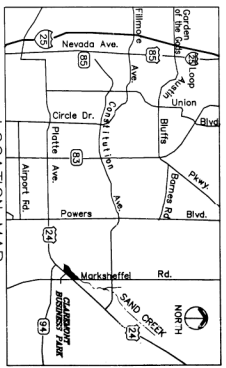
4/23/07
Date

Conditions:

DRAINAGE PLAN CLAREMONT BUSINESS PARK FILING NO. 2

OWNER = ADVANCED RV & SELF STORAGE LLP
(69.8 AC.)

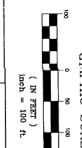
LAND USE = VACANT LAND
SIGNING = BLDG FOOTPRINT



EXISTING POINT SUMMARY

NO.	TYPE	COORDINATES	ELEVATION
1	MANHOLE	500.00 500.00	500.00
2	MANHOLE	500.00 500.00	500.00
3	MANHOLE	500.00 500.00	500.00
4	MANHOLE	500.00 500.00	500.00
5	MANHOLE	500.00 500.00	500.00
6	MANHOLE	500.00 500.00	500.00
7	MANHOLE	500.00 500.00	500.00
8	MANHOLE	500.00 500.00	500.00
9	MANHOLE	500.00 500.00	500.00
10	MANHOLE	500.00 500.00	500.00
11	MANHOLE	500.00 500.00	500.00
12	MANHOLE	500.00 500.00	500.00
13	MANHOLE	500.00 500.00	500.00
14	MANHOLE	500.00 500.00	500.00
15	MANHOLE	500.00 500.00	500.00
16	MANHOLE	500.00 500.00	500.00
17	MANHOLE	500.00 500.00	500.00
18	MANHOLE	500.00 500.00	500.00
19	MANHOLE	500.00 500.00	500.00
20	MANHOLE	500.00 500.00	500.00

- LEGEND**
- 6820 PROPOSED CONTOUR
 - 6820 PAVING CONTOUR
 - 6820 EXISTING CONTOUR
 - 6820 EXISTING STORM DRAIN PIPE
 - 6820 EXISTING TYPE R INLET
 - 6820 PROPOSED TYPE I OR II MANHOLE
 - 6820 FLOW ARROW
 - 6820 BASIN DESIGNATION
 - 6820 COEFFICIENT (100 RP)
 - 6820 BASIN AREA (ACRES)
 - 6820 FILING 1 LIMITS
 - 6820 DRAINAGE CHANNEL
 - 6820 DRAINAGE BASIN BOUNDARY
 - 6820 FILING NO. 2



NO.	DATE	REVISIONS	DESCRIPTION	BENCHMARK DATA(ELEV.)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

REFERENCES

REVISIONS

DESCRIPTION

BENCHMARK DATA(ELEV.)

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.

Matrix Design Group, Inc.
Integrated Design Solutions, 2435 Research Parkway, Suite 20
Colorado Springs, CO 80909
Phone: 719-575-4288
Fax: 719-575-4288

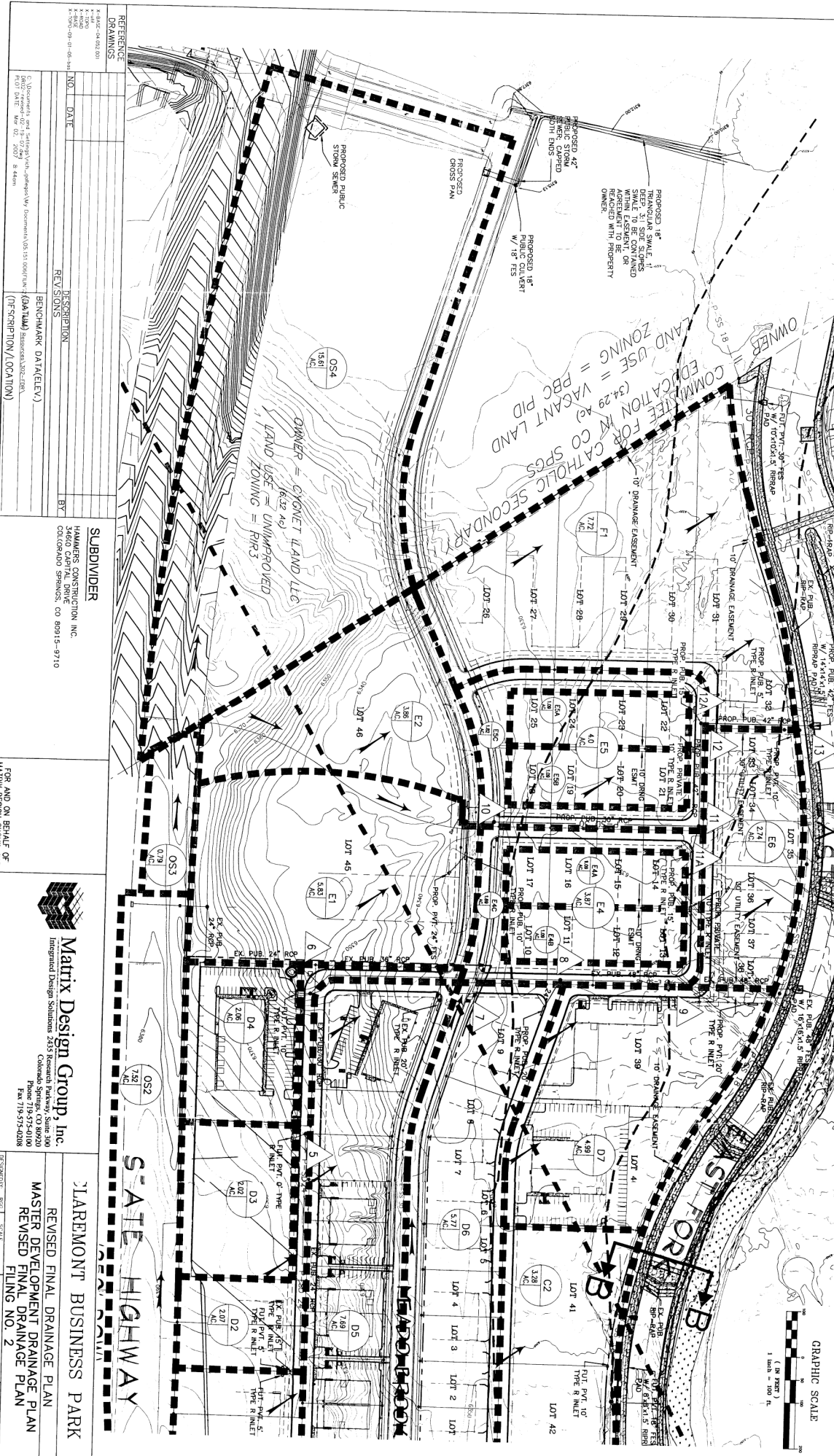
CLAREMONT BUSINESS PARK
FINAL DEVELOPMENT DRAINAGE PLAN
FINAL DRAINAGE PLAN
FILING NO. 2

DR01

DESIGN POINT SUMMARY	
DATE	02/02/2007
TIME	10:00 AM
PROJECT	CLAREMONT BUSINESS PARK
CLIENT	MARKIX DESIGN GROUP, INC.
SCALE	AS SHOWN
BY	MARKIX DESIGN GROUP, INC.

DRAINAGE PLAN CLAREMONT BUSINESS PARK FILING NO. 2

GRAPHIC SCALE
1 inch = 100 ft.



NO.	DATE	REVISIONS	BY

REFERENCE DRAWINGS A. 100-01-01 B. 100-01-02 C. 100-01-03 D. 100-01-04 E. 100-01-05 F. 100-01-06 G. 100-01-07 H. 100-01-08 I. 100-01-09 J. 100-01-10 K. 100-01-11 L. 100-01-12 M. 100-01-13 N. 100-01-14 O. 100-01-15 P. 100-01-16 Q. 100-01-17 R. 100-01-18 S. 100-01-19 T. 100-01-20 U. 100-01-21 V. 100-01-22 W. 100-01-23 X. 100-01-24 Y. 100-01-25 Z. 100-01-26 AA. 100-01-27 AB. 100-01-28 AC. 100-01-29 AD. 100-01-30 AE. 100-01-31 AF. 100-01-32 AG. 100-01-33 AH. 100-01-34 AI. 100-01-35 AJ. 100-01-36 AK. 100-01-37 AL. 100-01-38 AM. 100-01-39 AN. 100-01-40 AO. 100-01-41 AP. 100-01-42 AQ. 100-01-43 AR. 100-01-44 AS. 100-01-45 AT. 100-01-46 AU. 100-01-47 AV. 100-01-48 AW. 100-01-49 AX. 100-01-50 AY. 100-01-51 AZ. 100-01-52 BA. 100-01-53 BB. 100-01-54 BC. 100-01-55 BD. 100-01-56 BE. 100-01-57 BF. 100-01-58 BG. 100-01-59 BH. 100-01-60 BI. 100-01-61 BJ. 100-01-62 BK. 100-01-63 BL. 100-01-64 BM. 100-01-65 BN. 100-01-66 BO. 100-01-67 BP. 100-01-68 BQ. 100-01-69 BR. 100-01-70 BS. 100-01-71 BT. 100-01-72 BU. 100-01-73 BV. 100-01-74 BV. 100-01-75 BV. 100-01-76 BV. 100-01-77 BV. 100-01-78 BV. 100-01-79 BV. 100-01-80 BV. 100-01-81 BV. 100-01-82 BV. 100-01-83 BV. 100-01-84 BV. 100-01-85 BV. 100-01-86 BV. 100-01-87 BV. 100-01-88 BV. 100-01-89 BV. 100-01-90 BV. 100-01-91 BV. 100-01-92 BV. 100-01-93 BV. 100-01-94 BV. 100-01-95 BV. 100-01-96 BV. 100-01-97 BV. 100-01-98 BV. 100-01-99 BV. 100-01-100	REVISIONS 1. (DATE) (BY) (DESCRIPTION) 2. (DATE) (BY) (DESCRIPTION) 3. (DATE) (BY) (DESCRIPTION) 4. (DATE) (BY) (DESCRIPTION) 5. (DATE) (BY) (DESCRIPTION) 6. (DATE) (BY) (DESCRIPTION) 7. (DATE) (BY) (DESCRIPTION) 8. (DATE) (BY) (DESCRIPTION) 9. (DATE) (BY) (DESCRIPTION) 10. (DATE) (BY) (DESCRIPTION) 11. (DATE) (BY) (DESCRIPTION) 12. (DATE) (BY) (DESCRIPTION) 13. (DATE) (BY) (DESCRIPTION) 14. (DATE) (BY) (DESCRIPTION) 15. (DATE) (BY) (DESCRIPTION) 16. (DATE) (BY) (DESCRIPTION) 17. (DATE) (BY) (DESCRIPTION) 18. (DATE) (BY) (DESCRIPTION) 19. (DATE) (BY) (DESCRIPTION) 20. (DATE) (BY) (DESCRIPTION) 21. (DATE) (BY) (DESCRIPTION) 22. (DATE) (BY) (DESCRIPTION) 23. (DATE) (BY) (DESCRIPTION) 24. (DATE) (BY) (DESCRIPTION) 25. (DATE) (BY) (DESCRIPTION) 26. (DATE) (BY) (DESCRIPTION) 27. (DATE) (BY) (DESCRIPTION) 28. (DATE) (BY) (DESCRIPTION) 29. (DATE) (BY) (DESCRIPTION) 30. (DATE) (BY) (DESCRIPTION) 31. (DATE) (BY) (DESCRIPTION) 32. (DATE) (BY) (DESCRIPTION) 33. (DATE) (BY) (DESCRIPTION) 34. (DATE) (BY) (DESCRIPTION) 35. (DATE) (BY) (DESCRIPTION) 36. (DATE) (BY) (DESCRIPTION) 37. (DATE) (BY) (DESCRIPTION) 38. (DATE) (BY) (DESCRIPTION) 39. (DATE) (BY) (DESCRIPTION) 40. (DATE) (BY) (DESCRIPTION) 41. (DATE) (BY) (DESCRIPTION) 42. (DATE) (BY) (DESCRIPTION) 43. (DATE) (BY) (DESCRIPTION) 44. (DATE) (BY) (DESCRIPTION) 45. (DATE) (BY) (DESCRIPTION) 46. (DATE) (BY) (DESCRIPTION) 47. (DATE) (BY) (DESCRIPTION) 48. (DATE) (BY) (DESCRIPTION) 49. (DATE) (BY) (DESCRIPTION) 50. (DATE) (BY) (DESCRIPTION) 51. (DATE) (BY) (DESCRIPTION) 52. (DATE) (BY) (DESCRIPTION) 53. (DATE) (BY) (DESCRIPTION) 54. (DATE) (BY) (DESCRIPTION) 55. (DATE) (BY) (DESCRIPTION) 56. (DATE) (BY) (DESCRIPTION) 57. (DATE) (BY) (DESCRIPTION) 58. (DATE) (BY) (DESCRIPTION) 59. (DATE) (BY) (DESCRIPTION) 60. (DATE) (BY) (DESCRIPTION) 61. (DATE) (BY) (DESCRIPTION) 62. (DATE) (BY) (DESCRIPTION) 63. (DATE) (BY) (DESCRIPTION) 64. (DATE) (BY) (DESCRIPTION) 65. (DATE) (BY) (DESCRIPTION) 66. (DATE) (BY) (DESCRIPTION) 67. (DATE) (BY) (DESCRIPTION) 68. (DATE) (BY) (DESCRIPTION) 69. (DATE) (BY) (DESCRIPTION) 70. (DATE) (BY) (DESCRIPTION) 71. (DATE) (BY) (DESCRIPTION) 72. (DATE) (BY) (DESCRIPTION) 73. (DATE) (BY) (DESCRIPTION) 74. (DATE) (BY) (DESCRIPTION) 75. (DATE) (BY) (DESCRIPTION) 76. (DATE) (BY) (DESCRIPTION) 77. (DATE) (BY) (DESCRIPTION) 78. (DATE) (BY) (DESCRIPTION) 79. (DATE) (BY) (DESCRIPTION) 80. (DATE) (BY) (DESCRIPTION) 81. (DATE) (BY) (DESCRIPTION) 82. (DATE) (BY) (DESCRIPTION) 83. (DATE) (BY) (DESCRIPTION) 84. (DATE) (BY) (DESCRIPTION) 85. (DATE) (BY) (DESCRIPTION) 86. (DATE) (BY) (DESCRIPTION) 87. (DATE) (BY) (DESCRIPTION) 88. (DATE) (BY) (DESCRIPTION) 89. (DATE) (BY) (DESCRIPTION) 90. (DATE) (BY) (DESCRIPTION) 91. (DATE) (BY) (DESCRIPTION) 92. (DATE) (BY) (DESCRIPTION) 93. (DATE) (BY) (DESCRIPTION) 94. (DATE) (BY) (DESCRIPTION) 95. (DATE) (BY) (DESCRIPTION) 96. (DATE) (BY) (DESCRIPTION) 97. (DATE) (BY) (DESCRIPTION) 98. (DATE) (BY) (DESCRIPTION) 99. (DATE) (BY) (DESCRIPTION) 100. (DATE) (BY) (DESCRIPTION)
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SUBDIVIDER HANMERS CONSTRUCTION, INC. 3460 S. W. 10th Ave. COLO SPRINGS, CO 80915-9710	FOR AND ON BEHALF OF MARKIX DESIGN GROUP, INC.
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Matrix Design Group, Inc. Integrated Design Solutions 2435 Research Parkway, Suite 300 Colorado Springs, CO 80920 Phone: 719-575-2100 Fax: 719-575-6208	CLAREMONT BUSINESS PARK REVISED FINAL DRAINAGE PLAN MASTER DEVELOPMENT DRAINAGE PLAN REVISED FINAL DRAINAGE PLAN FILING NO. 2 DR02
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DRAINAGE MAP

CLAREMONT COMMERCIAL FILING NO. 2

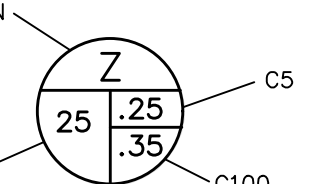
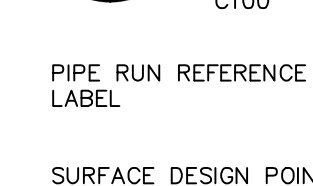

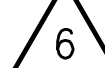


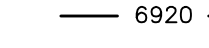




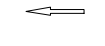


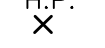


COUNTY OF EL PASO, STATE OF COLORADO

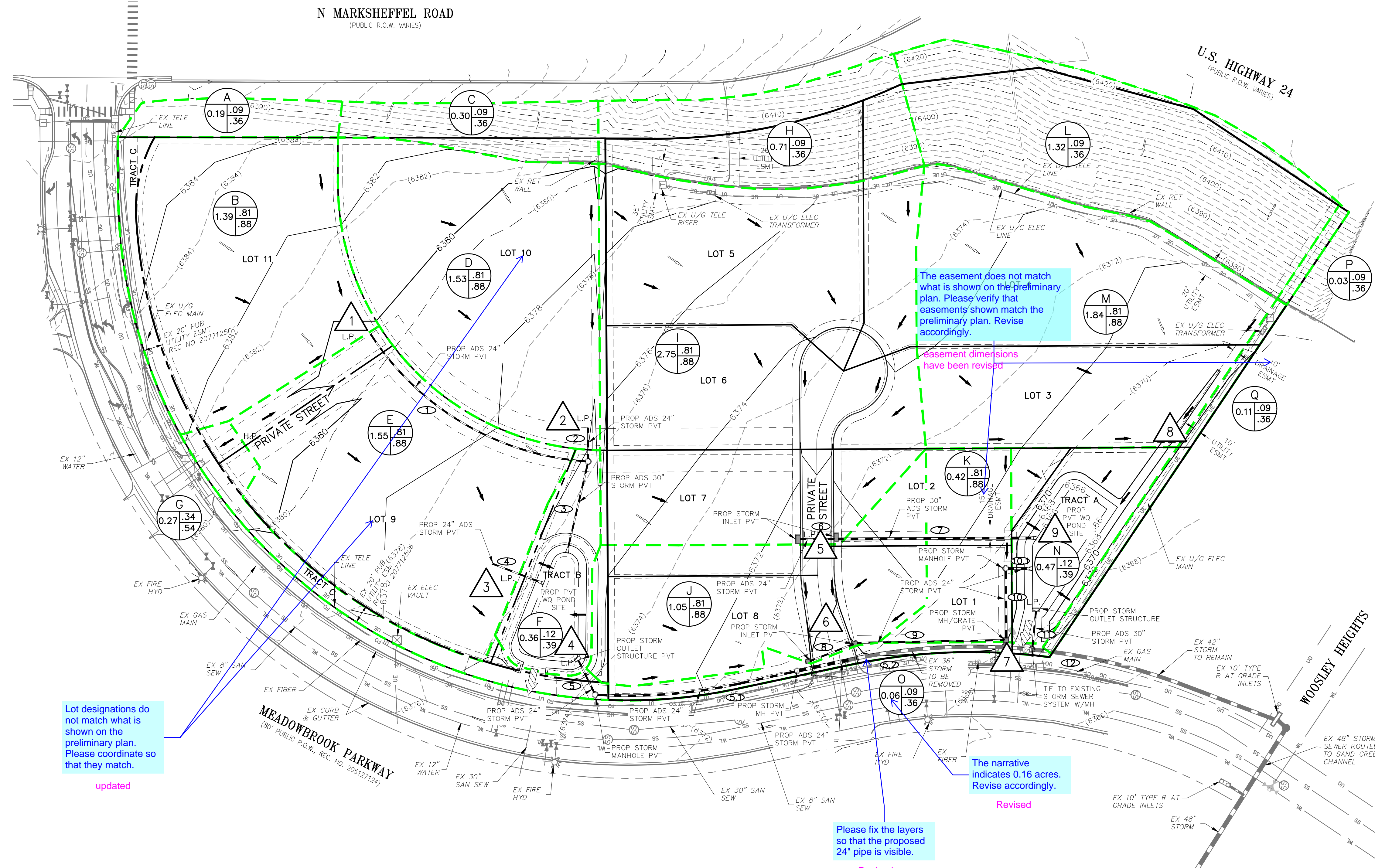
MASTER DEVELOPMENT DRAINAGE PLAN

NOVEMBER 2019

Revise title accordingly.
Revised

LEGEND

- BASIN DESIGNATION 
- ACRES 
- PIPE RUN REFERENCE LABEL 
- SURFACE DESIGN POINT 
- BASIN BOUNDARY 
- EXISTING CONTOUR 
- PROP CONTOUR 
- UG/E UNDERGROUND ELECTRICAL 
- EXISTING GAS LINE 
- STORM SEWER PIPE 
- EXISTING STORM SEWER PIPE 
- CROSSSPAN 
- INLET 
- EXISTING FLOW DIRECTION ARROW 
- EMERGENCY OVERFLOW DIRECTION 
- FLOW DIRECTION 
- FLARED END SECTION 
- H.P. X HIGH POINT
- L.P. X LOW POINT



The easement does not match what is shown on the preliminary plan. Please verify that easements shown match the preliminary plan. Revise accordingly.

Easement dimensions have been revised

Lot designations do not match what is shown on the preliminary plan. Please coordinate so that they match.

updated

The narrative indicates 0.16 acres. Revise accordingly.

Revised

Please fix the layers so that the proposed 24" pipe is visible.

Revised as requested

BASIN SUMMARY				
BASIN	AREA (ACRES)	Q ₅	Q ₁₀₀	Q ₁₀₀ /Q ₅
A	0.19	0.9	0.1	0.6
B	1.39	5.5	10.1	
C	0.30	0.1	1.0	
D	1.53	6.3	11.5	
E	1.55	6.5	11.8	
F	0.36	0.2	1.0	
G	0.29	0.5	1.3	
H	0.71	0.3	2.0	
I	2.75	9.8	17.9	
J	1.05	4.4	8.0	
K	0.42	0.8	3.2	
L	1.32	0.5	3.5	
M	1.84	6.7	12.2	
N	0.47	0.1	1.3	
O	0.16	0.2	0.6	
P	0.03	0.0	0.1	
Q	0.11	0.0	0.3	

DESIGN POINT SUMMARY				
DESIGN POINT	Q ₅	Q ₁₀₀	BASIN	STRUCTURE
1	5.6	10.6	A, B	24" PP
2	6.4	12.4	C, D	24" PP
3	6.5	11.8	E	24" PP
4	18.2	35.0	F, DP1-3	POND 1
5	10.1	19.8	H, I	10"/15" INLETS
6	4.4	11.2	J, FBOPS	10"/15" INLETS
7	1.8	3.2	DP6, IN-K	MH W/GRATE
8	7.2	15.7	L, M	24" PP OR SWALE
9	18.5	38.4	DP5,7,8, N	POND 2

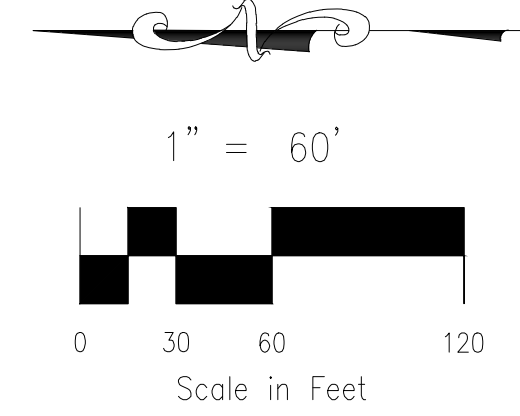
STORM SEWER SUMMARY				
PIPE RUN	Q ₅	Q ₁₀₀	PIPE SIZE	CONTRIBUTING DP/BASIN/PIPES
1	6.5	11.8	24"	DP1
2	6.4	12.4	24"	DP2
3	11.8	22.6	30"	PR1, PR2
4	6.5	11.8	24"	DP3
5	7.2	15.5	24"	POND 1 OUTFALL
5.1	7.2	15.5	24"	PR5
5.2	7.2	15.5	24"	PR5.1
6	6.4	10.6	24"	INLET 1
7	10.1	16.6	30"	PR1, INLET 2
8	2.8	6.9	18"	INLET 3
9	4.4	11.0	24"	PR5, INLET 4
10	6.2	14.3	24"	PR9, DP7
10.1	6.2	14.3	24"	PIPE 10
11	11.0	23.1	30"	POND 2 OUTFALL
12	17.6	33.8	EX42"	PR5, PR11

SF WQCV POND 1 SUMMARY	
EPC/URBAN DRAINAGE SAND FILTER BASIN-SEE STD. DET.	
AREA REQUIRED	2,335 SF
AREA PROVIDED	3,690 SF

SF ELEV = 6373.00
WQCV WSE = 6374.04
100 YR SPILLWAY ELEV = 6375.00
100 YR WSE = 6374.80

SF WQCV POND 2 SUMMARY	
EPC/URBAN DRAINAGE SAND FILTER BASIN-SEE STD. DET.	
AREA REQUIRED	2,962 SF
AREA PROVIDED	3,292 SF

SF ELEV = 6365.50
WQCV WSE = 6366.63
100 YR SPILLWAY ELEV = 6368.00
100 YR WSE = 6367.88



102 E. PIKES PEAK AVE., 5TH FLOOR
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

CLAREMONT COMMERCIAL FIL. NO. 2

MASTER DEVELOPMENT DRAINAGE PLAN

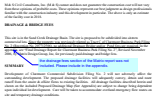
PROJECT NO. 44-037A	FILE: \\dwg\Eng Exhibits\44037-PDRM.dwg	DATE: 11-19-2019
DESIGNED BY: GW	SCALE: HORIZ: 1"=60'	SHEET 1 OF 1
DRAWN BY: CLP	VERT: N/A	PDM01
CHECKED BY: VAS		

File: C:\44037A-CBP-F2-Lots 1-8.dwg User: PRELIM DRAINAGE REPORT MAP 44037-PDRM.dwg Plotstamp: 11/22/2019 2:03 PM

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES
FOR BURIED UTILITY INFORMATION 48 HRS BEFORE YOU DIG CALL 1-800-922-1987

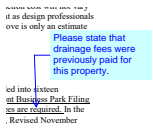
Prelim Drainage Report_v1_redlines.pdf Markup Summary

Callout (41)



Subject: Callout
Page Label: 10
Author: Daniel Torres
Date: 1/13/2020 1:08:29 PM
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the drainage fees section of the Matrix report was not included. Please include in the appendix.



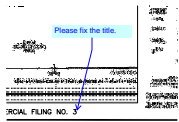
Subject: Callout
Page Label: 10
Author: Daniel Torres
Date: 1/13/2020 1:17:48 PM
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Please state that drainage fees were previously paid for this property.



Subject: Callout
Page Label: 1
Author: Daniel Torres
Date: 1/13/2020 1:28:32 PM
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Space:

Revise the title to Preliminary Drainage Report.



Subject: Callout
Page Label: 18
Author: Daniel Torres
Date: 1/13/2020 10:27:32 AM
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Color: ■
Layer:
Space:

Please fix the title.



Subject: Callout
Page Label: 20
Author: Daniel Torres
Date: 1/13/2020 10:30:20 AM
Status:
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Space:

Please update the title



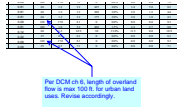
Subject: Callout
Page Label: 27
Author: Daniel Torres
Date: 1/13/2020 10:53:58 AM
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Please use the latest UD detention worksheet by Urban Drainage. Note that the hydraulics and pond design will be reviewed with the final drainage report.



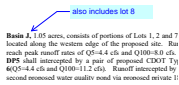
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Author: Daniel Torres
Date: 1/13/2020 10:56:02 AM
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Please fix the layers so that the proposed 24" pipe is visible.



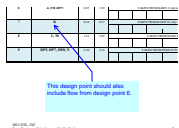
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Author: Daniel Torres
Date: 1/13/2020 11:44:13 AM
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Per DCM ch 6, length of overland flow is max 100 ft. for urban land uses. Revise accordingly.



Subject: Callout
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Author: Daniel Torres
Date: 1/13/2020 12:30:58 PM
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also includes lot 8



Subject: Callout
Page Label: 22
Author: Daniel Torres
Date: 1/13/2020 12:33:15 PM
Status:
Color: ■
Layer:
Space:

This design point should also include flow from design point 6.

MDOT CONSULTING CORP.
 PROJECT: 16-014
 DRAWING: 16-014-01

NO.	DESCRIPTION	DATE	BY	CHKD BY
1	ISSUED FOR PERMIT	1/13/2020	DANIEL TORRES	
2	REVISED			
3	REVISED			
4	REVISED			
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6	REVISED			
7	REVISED			
8	REVISED			
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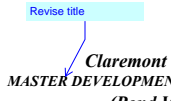
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Page Label: 23
Author: Daniel Torres
Date: 1/13/2020 12:35:23 PM
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pipe run 6

14.3	PROPOSED 24" PIPE
22.1	PROPOSED 24" PIPE
22.8	PROPOSED 24" PIPE

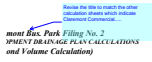
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Date: 1/13/2020 12:38:31 PM
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existing 42" pipe?



Subject: Callout
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Author: Daniel Torres
Date: 1/13/2020 12:40:56 PM
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Revise title



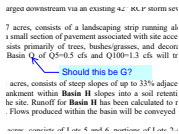
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Revise the title to match the other calculation sheets which indicate Claremont Commercial....



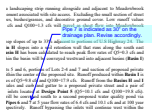
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Author: Daniel Torres
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based on the soils map provided, the soil group for this pond should be "A"



Subject: Callout
Page Label: 7
Author: Daniel Torres
Date: 1/13/2020 8:29:26 AM
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Color: ■
Layer:
Space:

Should this be G?



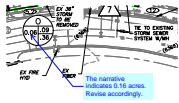
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Author: Daniel Torres
Date: 1/13/2020 8:34:23 AM
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Color: ■
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Pipe 7 is indicated as 30" on the drainage plan. Revise accordingly.



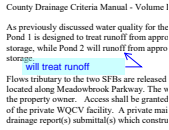
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Page Label: 65
Author: Daniel Torres
Date: 1/13/2020 9:21:21 AM
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The easement does not match what is shown on the preliminary plan. Please verify that easements shown match the preliminary plan. Revise accordingly.



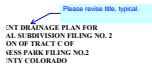
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Page Label: 65
Author: Daniel Torres
Date: 1/13/2020 9:46:49 AM
Status:
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The narrative indicates 0.16 acres. Revise accordingly.



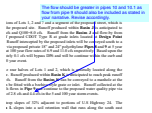
Subject: Callout
Page Label: 9
Author: Daniel Torres
Date: 1/13/2020 9:59:01 AM
Status:
Color: ■
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will treat runoff



Subject: Callout
Page Label: 2
Author: Daniel Torres
Date: 1/14/2020 7:28:44 AM
Status:
Color: ■
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Please revise title, typical.



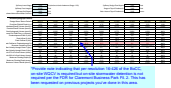
Subject: Callout
Page Label: 8
Author: Daniel Torres
Date: 1/14/2020 7:35:02 AM
Status:
Color: ■
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Space:

The flow should be greater in pipes 10 and 10.1 as flow from pipe 9 should also be included as stated in your narrative. Revise accordingly.



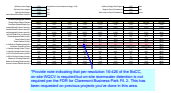
Subject: Callout
Page Label: 9
Author: Daniel Torres
Date: 1/14/2020 7:35:27 AM
Status:
Color: ■
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Per County criteria water quality must be provided for 100% of the site. ECM section I.7.1.C.1 indicates that 20% of site, not to exceed 1 acre may be excluded. Provide discussion regarding the proposed basins that will not be treated and ensure that the total will not exceed 1 acre.



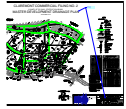
Subject: Callout
Page Label: 29
Author: Daniel Torres
Date: 1/14/2020 7:49:33 AM
Status:
Color: ■
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*Provide note indicating that per resolution 16-426 of the BoCC, on-site WQCV is required but on-site stormwater detention is not required per the FDR for Claremont Business Park Fil. 2. This has been requested on previous projects you've done in this area.



Subject: Callout
Page Label: 36
Author: Daniel Torres
Date: 1/14/2020 7:49:49 AM
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*Provide note indicating that per resolution 16-426 of the BoCC, on-site WQCV is required but on-site stormwater detention is not required per the FDR for Claremont Business Park Fil. 2. This has been requested on previous projects you've done in this area.



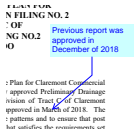
Subject: Callout
Page Label: 65
Author: Daniel Torres
Date: 1/14/2020 7:50:14 AM
Status:
Color: ■
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Space:

Revise title accordingly.



Subject: Callout
Page Label: 5
Author: Daniel Torres
Date: 1/8/2020 1:10:08 PM
Status:
Color: ■
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The previous page indicates 2 sand filter basins. Please revise.



Subject: Callout
Page Label: 4
Author: Daniel Torres
Date: 1/8/2020 1:15:07 PM
Status:
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Previous report was approved in December of 2018



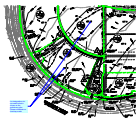
Subject: Callout
Page Label: 6
Author: Daniel Torres
Date: 1/8/2020 1:16:27 PM
Status:
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Please revise your label of the previously approved drainage report as it is not an MDDP. It is a Final Drainage Report.



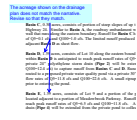
Subject: Callout
Page Label: 5
Author: Daniel Torres
Date: 1/8/2020 1:31:55 PM
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preliminary GEC has been provided. Final GEC plan will be provided with the final plat. Please revise.



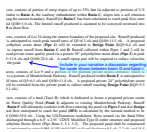
Subject: Callout
Page Label: 65
Author: Daniel Torres
Date: 1/9/2020 3:05:05 PM
Status:
Color: ■
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Lot designations do not match what is shown on the preliminary plan. Please coordinate so that they match.



Subject: Callout
Page Label: 7
Author: Daniel Torres
Date: 1/9/2020 3:09:18 PM
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The acreage shown on the drainage plan does not match the narrative. Revise so that they match.



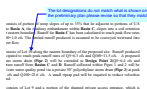
Subject: Callout
Page Label: 7
Author: Daniel Torres
Date: 1/9/2020 3:28:17 PM
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Include in your narrative a discussion regarding the swale shown between basin D and basin I.



Subject: Callout
Page Label: 6
Author: Daniel Torres
Date: 1/9/2020 7:35:02 AM
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Please include discussion regarding existing pipes/stub outs on the property indicated in the previously approved drainage reports by Matrix and why they were not used.



Subject: Callout
Page Label: 7
Author: Daniel Torres
Date: 1/9/2020 8:35:00 AM
Status:
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The lot designations do not match what is shown on the preliminary plan please revise so that they match.


Highlight (24)

MDDP CI
PRO

Subject: Highlight
Page Label: 20
Author: Daniel Torres
Date: 1/13/2020 10:30:26 AM
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MDDP

MDDP CI
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Subject: Highlight
Page Label: 21
Author: Daniel Torres
Date: 1/13/2020 10:33:04 AM
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MDDP

MDDP CI
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Subject: Highlight
Page Label: 22
Author: Daniel Torres
Date: 1/13/2020 10:33:11 AM
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MDDP CI
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Subject: Highlight
Page Label: 23
Author: Daniel Torres
Date: 1/13/2020 10:33:16 AM
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MDDP


Claremont Bas. Park Filing No. 2
MASTER DEVELOPMENT DRAINAGE PLAN - 11.11.17
(Pond Volume Calculations)

INLET	PIPE	INLET	PIPE	INLET	PIPE
1	1	1	1	1	1
1	1	1	1	1	1
1	1	1	1	1	1


Subject: Highlight
Page Label: 26
Author: Daniel Torres
Date: 1/13/2020 10:33:30 AM
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MASTER DEVELOPMENT DRAINAGE PLAN

INLET 1
PIPE 1, INLET 1
INLET 3


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Page Label: 23
Author: Daniel Torres
Date: 1/13/2020 12:35:37 PM
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Subject: Highlight
Page Label: 9
Author: Daniel Torres
Date: 1/13/2020 9:54:01 AM
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CLARENCE INDUSTRIAL SUBDIVISION FILING NO. 1
A SUBDIVISION OF TRACT 149
CLARENCE BUSINESS PARK FILING NO. 2
EL PASO COUNTY COLORADO
DRAINAGE PLANNING STATEMENTS

Subject: Highlight
Page Label: 2
Author: Daniel Torres
Date: 1/14/2020 7:28:26 AM
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MASTER DEVELOPMENT DRAINAGE PLAN

Park Filing No. 2, dated November 2006, is referred to as "MDDP") has been designed to discharge the system directly into the East Park Sand Creek. The 40" RCP system east of Meadowbrook Parkway, from the point in a peak event within 12 hours, directly on the downstream drainageways.

Subject: Highlight
Page Label: 5
Author: Daniel Torres
Date: 1/8/2020 1:08:38 PM
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"MDDP

is a portion of an existing 40" RCP storm sewer system. Channeled via an outlet structure with wingwalls, the Sand Creek Water Quality Facility, referred to as "MDDP", has been designed to discharge the system directly into the East Park Sand Creek. The 40" RCP system east of Meadowbrook Parkway, from the point in a peak event within 12 hours, directly on the downstream drainageways.

Subject: Highlight
Page Label: 5
Author: Daniel Torres
Date: 1/8/2020 1:10:18 PM
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a Sand Filter Water Quality Facility

business Park Filing No. 2, dated November 2006, is referred to as "MDDP"). The MDDP will be installed in the tributary area of Sand Creek Parkway, from the point in a peak event within 12 hours, directly on the downstream drainageways.

Subject: Highlight
Page Label: 6
Author: Daniel Torres
Date: 1/8/2020 1:13:52 PM
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"MDDP

ing No. 2", dated November 2006, is referred to as "MDDP"). The MDDP will be installed in the tributary area of Sand Creek Parkway, from the point in a peak event within 12 hours, directly on the downstream drainageways.

Subject: Highlight
Page Label: 6
Author: Daniel Torres
Date: 1/8/2020 1:13:55 PM
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MDDP

would produce a peak flow of approximately 1.6 cfs. The MDDP will be installed in the tributary area of Sand Creek Parkway, from the point in a peak event within 12 hours, directly on the downstream drainageways.

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Author: Daniel Torres
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Author: Daniel Torres
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CLAREMONT COMMERCIAL FILING NO. 2
MASTER DEVELOPMENT DRAINAGE PLAN

Subject: Highlight
Page Label: 65
Author: Daniel Torres
Date: 1/8/2020 1:29:51 PM
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MASTER DEVELOPMENT DRAINAGE PLAN



CLAREMONT COMMERCIAL FILING NO. 2
MASTER DEVELOPMENT DRAINAGE PLAN

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Author: Daniel Torres
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Subject: Highlight
Page Label: 5
Author: Daniel Torres
Date: 1/8/2020 1:34:39 PM
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
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Subject: Highlight
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Author: Daniel Torres
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Subject: Highlight
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Author: Daniel Torres
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Author: Daniel Torres
Date: 1/8/2020 1:37:13 PM
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**MASTER DEVELOPMENT DRAINAGE PLAN FOR
CLAREMONT COMMERCIAL SUBDIVISION, TRACT NO. 2
A SUBDIVISION OF TRACT C OF
CLAREMONT BUSINESS PARK, TRACT NO. 2
EL PASO COUNTY, COLORADO**

DATE OF APPROVAL

LEGAL LOCATION AND DESCRIPTION

Subject: Highlight
Page Label: 3
Author: Daniel Torres
Date: 1/8/2020 12:41:10 PM
Status:
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MASTER DEVELOPMENT DRAINAGE PLAN

**MASTER DEVELOPMENT DRAINAGE PLAN FOR
CLAREMONT COMMERCIAL SUBDIVISION, TRACT NO. 2
A SUBDIVISION OF TRACT C OF
CLAREMONT BUSINESS PARK, TRACT NO. 2
EL PASO COUNTY, COLORADO**


DATE OF APPROVAL

LEGAL LOCATION AND DESCRIPTION

Subject: Highlight
Page Label: 4
Author: Daniel Torres
Date: 1/8/2020 12:41:26 PM
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MASTER DEVELOPMENT DRAINAGE PLAN

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Subject: Highlight
Page Label: 7
Author: Daniel Torres
Date: 1/9/2020 10:57:59 AM
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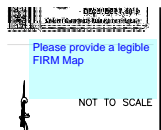
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Subject: Highlight
Page Label: 7
Author: Daniel Torres
Date: 1/9/2020 10:58:01 AM
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9

Text Box (2)



Subject: Text Box
Page Label: 18
Author: Daniel Torres
Date: 1/13/2020 10:30:54 AM
Status:
Color: 
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Space:

Please provide a legible FIRM Map



Subject: Text Box
Page Label: 6
Author: Daniel Torres
Date: 1/14/2020 7:29:49 AM
Status:
Color: ■
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Please also include in your narrative how your proposed flows entering the existing storm system compare to the previously approved drainage report from Matrix. State whether or not the existing facilities are adequate. Please take into account the recently approved drainage report from the lot to the south (PCD file no. PPR192) that will also tie into this existing system.